AMATEUR RADIO

MARCH 1965

Vol. 33, No. 3

2/6

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		6B6	7/6								

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1625	5/-	QQE04/20	£3½
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OUR COVER

Girls at St. Anne's Church of England Girls' Grammar School, Sale, who recently passed the Elementary Certificate under the W.I.A. Y.R.S. These are the first YLs to gain same in VK3. Back Row: Anne Martin, Bronwyn Roberts, Sharen Budge. Front Row: Barbara Knight and Joy Byatt.

FEDERAL COMMENT

★

MORSE CODE EXAMINATIONS

One of the lesser-known activities of the various Divisions of the Institute is that of training classes to fit potential Amateurs for the P.M.G. examinations in A.O.C.P. or L.A.O.C.P. grades. Classes are conducted in the theory, regulations and Morse Code standards necessary to pass the relevant exam. In addition, some Divisions also run correspondence courses which enable country aspirants to study in the same way as his town brother.

It has been fairly common practice by the Department to keep the level of their theory and regulation exams. consistent throughout the Commonwealth and between town and country, but this has not been so in the Morse Code exam. Different examiners in each State and the local Postmaster generally in country centres has led to considerable differences in the standard of the "fist" by which candidates pass or fail.

The learning of the Morse Code depends largely on the patience and perseverence of the instructor, and of course the desire of the aspirant to learn. The Institute has had some remarkable instructors in the past—in VK3 in particular, those who learnt under the late Herman Asmus, VK3ET, had to be good operators or one did not even get to the exam. A succession of Institute instructors in the various States has no doubt followed somewhat similar but individualistic lines. Most can be said to have had one thing in common—they were good instructors with more than average "fists", otherwise they did not hold their job.

Whilst it can be said that a good c.w. man can copy any "fist" served up to him, this is not true of the average student, particularly under examination conditions. He will need at least 4 w.p.m. "up his sleeve" and some good sending to boot. We believe that in the country particularly, many students have to try to copy a local Postmaster who perhaps has not sent Morse for years and this, added to the general stress of the exam., leads to a greater failure rate than should be the case.

In the interests of uniformity and in common with teaching practices established in other fields of education, we consider the time has come for the use of tape recordings, all of the same operator, who is an expert, so that the Morse Code exams. throughout the country will be the same and put all students on the same common basis for the receiving test. The machinery for implementing such a system should not be insurmountable by the Department which is generally well supplied with modern equipment.

By adopting such a system, the country stands to gain quite a few more c.w. operators which the nation will still need in time of emergency, but which at present may forever remain an L.A.O.C.P. despite his desire to be a full licensee. This innovation by the Department would be an incentive to Institute instructors and students alike.

FEDERAL EXECUTIVE, W.I.A.

CONTENTS

THE MINIWHIP

EFFICIENT MULTI-BAND HELICAL WHIPS

MAX J. SWABY, VK4DA*

MY XYL insisted that if the Tri-Band Swan went into the Valiant it must look respectable, both inside and out. This meant that the centre-loaded 8 to 12 foot whip was out and the finished job must therefore look like a car radio antenna and be only 4 feet odd in length.

Very little of a practical nature has been published in regard to home-brewing the Helical Mobile Whip, hence the above ultimatum indicated an investigation of the Helical, and, leaving out the blood sweat and tears that went into finding out the hard way, the following is a summary of constructional details of whips for 80, 40 and 20 metres. The figures given and the conclusions reached are my own and are no doubt open to argument—but please not with me. The theory behind Helical Whips is somewhat contentious and I just don't know enough to argue the matter. They really work and work well; how or why they work is someone else's worry.

The 80 metre whip will produce S7 to S9 reports from ZL at night when conditions are right, and usually S7 over 1,000 miles odd around VK. The 40 mx job produces S5 reports from G land during the later afternoon when conditions are normal, and compares favourably with fixed station antenna set-ups. The 20 metre whip will consistently work DX during the period of band openings with surprisingly solid contacts, with reports varying from S5 to 20 db. over S9. All the above results are naturally under mobile conditions, and on each band the antenna loads heavily and presents a flat line to the Transceiver without the fuss that fractures 6DQ5s.

Each whip is wound on a 4 ft. 8 in. length of tapered fibre-glass fishing rod 8 mm. diameter at the base and 2 mm. diameter at the tip. A 2" ferrule is glued to the base with epoxy resin glue and the ferrule end of the whip is chucked into an electric drill for winding, with the tip suitably supported to stop whipping.

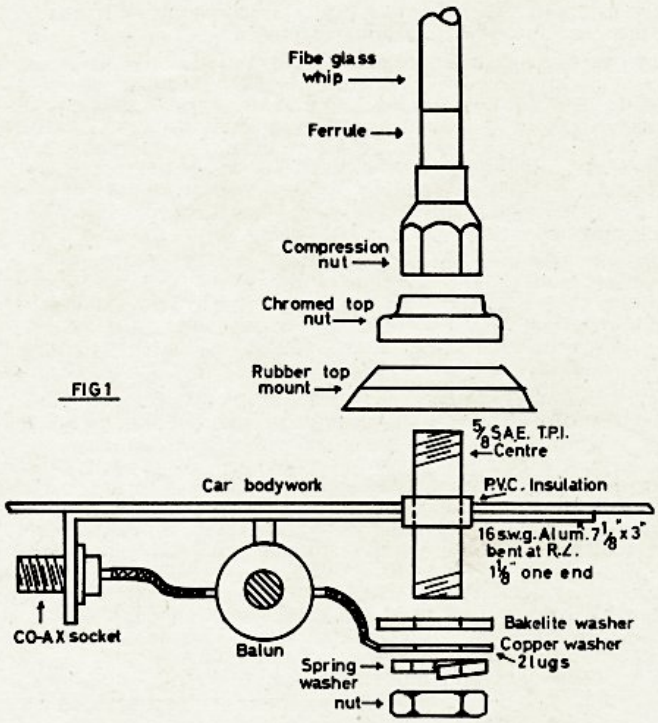
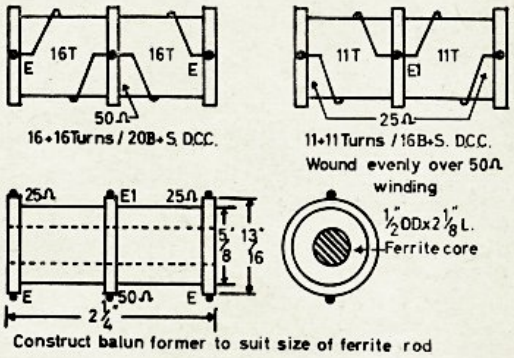


FIG 1



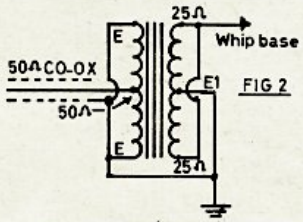


FIG 2

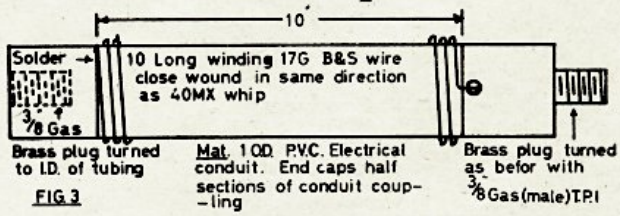


FIG 3

CONSTRUCTIONAL DETAILS

40 Metres: Use 21 B. & S. tough enamelled wire and solder the first turn to the top of the ferrule. Starting at the ferrule wind 20 turns close wound, then 2 turns spaced over 4", and the remainder of the rod is close wound to the tip. The resonant frequency will be about 6.95 Mc.

If difficulty is experienced in acquiring the right size of rod materials, these blanks are readily available from Len Butterworth Pty. Ltd., 369 Stanley St., South Brisbane.

20 Metres: With the same gauge wire wind 6 turns over 24½" and the remainder close wound to the tip. The resonant frequency will be about 14 Mc.

80 Metres: Use 27 gauge B. & S. and completely fill the whole rod with close wound turns. This will be approximately 3.6 Mc.

Further experiments have now been carried out on the idea of the combination whip for 80 metres whereby the 40 metre whip is screwed to the top of a Resonator, the whole tuning to 80 metres, and as the results have been so promising constructional details of the Resonator are shown in Fig. 3.

Various tests indicate that the combination produces about 3 db. more signal Interstate than the straight 80 metre whip wound with 27 gauge wire. This is probably due to the lowering of IR losses by the use of a larger gauge wire on a larger former, and this is further borne out by an apparent increase in the Q of the combination, making it very frequency conscious with a bandwidth of only about 30 kc.

The base impedances of the above antennae will be very close to 25 ohms and will vary somewhat with mounting position, car construction, and fibre-glass characteristics. The base is coupled through a ferrite-cored 2 to 1 impedance ratio transformer and then by the shortest length of 50 ohm co-ax. back to the transceiver. The 50 ohm impedance figure was decided upon because a few commercial mobile transceivers use a fixed 50 ohm output, and these will load nicely to the above set-up.

* "Timberline," M.S. 902, Dalby, Qld.

TUNE-UP

An Antennascope is recommended for accuracy, but a grid-dipper will do almost as well. Couple the dipper (or dipper and antennascope) to the transmitter end of the co-ax. and a dip will be found corresponding to the above-quoted frequencies; other dips are also present but can be ignored. Assuming that the car is reasonably removed from nearby reflecting or absorbing surfaces, the tip of the whip can then be trimmed with side-cutters, a few turns at a time, until just below the desired frequency. Then turn on the mobile transceiver and enough antenna radiation from the g.d.o. will leak through to give a signal. Trim one turn at a time from the whip tip and by following the g.d.o. on the receiver, the antenna can be put exactly on frequency.

From experience I find that recommended centre frequencies for the whips are 3.65 Mc., 7.090 Mc. and 14.250 Mc. These frequencies you will find are the most useful for mobile operation and the ones most likely to produce the maximum number of QSOs.

Bandwidths: The following figures are not on a db. rating, but the efficiency falls off rapidly past these limits:

3 Mc.	40 Kc.
7 Mc.	60 Kc.
14 Mc.	150 Kc.

MOUNTING

My mounting is on the top of the rear offside mudguard, but any position reasonably high on the car and removed from the turret (or upper body portion of the car) is satisfactory. Bumper mounting is **not** recommended as it will drastically alter the base impedance and bring the high current portion of the whip close to the bodywork, resulting in a decrease in efficiency.

Fig. 1 shows details of the mounting arrangement I use, the materials being readily available and the construction requiring only simple hand tools. The centre threaded portion, the top insulators and the bottom fittings being all parts from Astor "Air Chief' car aerials of the 1948-55 era, and the bottom tubular section of this aerial will provide the ferrules mentioned above. The whip nut is a $\frac{3}{8}$" gas compression nut ($\frac{5}{8}$" S.A.E. thread) with $\frac{3}{8}$" internal bore and will fit the whip base ferrules which are belled at the bottom for a push fit into the compression nut. The mounting plate is 16 s.w.g. aluminium, shaped to fit the body contour at the mounting point.

Remove the paint over the area of contact between the car body and the mounting plate. By extending the thread on the centre portion of the Astor fitting and running the thread completely through the top chrome plated nut about $\frac{5}{8}$" thread will be available at the top to hand tighten each whip into position as required.

COVERING

For mechanical and moisture protection, the whips are covered with epoxy resin glue ("Araldite") by applying an even coat and drying to a smooth transparent surface for a few minutes in front of an electric radiator, turning the whip to ensure an even flow of resin. They are then hung by the tip to dry for 24 hours. A better appearance and better protection may be obtained by covering with plastic tubing. Use 6 mm. tubing and cut a length 12" longer than the whip and after closing off each end, immerse the length in pure benzol until the whole length is soft and supple.

Trim the closed off ends and slide one end as far up the whip as possible, then by applying a regulated 10 to 20 lbs. of air pressure (or oxygen) to the open end the plastic can be slipped the full length of the whip with a lot of urging. The pressure must be watched, as it's quite disconcerting, and very noisy, when excessive pressure blows a hole in the tubing.

The base end is temporarily tied in position with tape and the tip end of the tubing is stretched until it follows the whip taper. Glue the top few inches of the whip, winding with an adhesive that does not attack the tubing, and tie into position until the glue dries and the tubing reforms to the shape of the whip. If the type of plastic tubing which will decrease diameter 50% upon the application of hot air can be obtained, the covering problem can be greatly simplified.

After each whip is completed, the tip must be covered by a plastic cap or the top three inches of the whip will burst into flame during the first damp day. This cap assists also in the reduction of corona noise during mobile reception. Suitable caps are obtained from small ointment tubes (Golden Eye Ointment, etc.) and are easily screwed onto the top few turns and cemented into position.

The above photo shows the author and his 40 metre whip on car mount. An assortment of experimental whips is leaning against the rear of the car. The author is holding a 40 metre midget that will work Interstate but with lowered efficiency and was wound only to find out if a Helical 12 inches long would load and radiate.

IMPEDANCE TRANSFORMER

Details of this transformer are as shown in Fig. 2 and particularly watch the winding arrangement. The circuit as shown is correct although the phasing arrangement of the coils does look unusual. These transformers are available at a price that makes home-brewing dubious as the high frequency core material is somewhat difficult to obtain.

COMMENTS

These whips are naturally not as efficient as a properly matched 10-foot centre loaded job, but the difference in performance would have to be measured as comparisons against both commercial and home-brew centre-loaded jobs showed no apparent difference. The 80 metre version is a compromise because the fibre-glass pole is not large enough to hold the right length of a heavier gauge wire. Its performance can definitely be improved by using a 5-foot length of larger diameter with 21 B. & S. wire although a slight base impedance mismatch may occur.

As indicated earlier in this article, the trimming to frequency is very critical and if you end up with a whip that is too high in frequency, the frequency can be lowered with top capacity by replacing the plastic tip cover with a metal cap of a length sufficient to bring the whip back to resonance. A 1" long cap will lower the frequency about 75 kc. on 40 metres.

If on completion the whip is slightly low in frequency, the resonant point can be raised by a shorted turn of $\frac{1}{8}$" wide shim brass over the plastic cover on the lower portion of the whip, which will produce a shift in the order of 25 kc. on 40 metres.

As the whips will run warm, when loaded to a Swan, at an area one-third of the length from the base end, it is considered that winding the first third of the whip with say 16 gauge B. & S. wire and the remainder with 26 gauge would produce a more efficient whip.

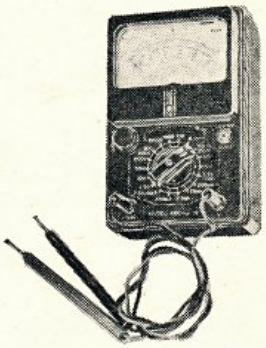
Although parallel rod in suitable diameters is readily available, tests have shown that due to the weight of the wire concentrated at a height above the base, the constant pendulum effect fatigues the rod at the mount and fracture eventually results. This can be obviated by moulding a thicker section for the first few inches. Fatigue and pendulum effect are not present with the tapered sections as described above.

The work done on the above whips has been most interesting and very worth while as far as results go. Possibly in this article I have missed a point or two, and if anyone desires further information I can be found around 3.675 Mc. almost any night or around 7.1 Mc. mobile on week-ends. Please don't write for details as I just have not the time available for correspondence.

An idea for an efficient 80 metres whip which has not as yet been tried, would be to wind a base section of 16 B. & S. approximately 2 feet long on $\frac{3}{4}$" fibre glass. This would have a male union on top to take the 40 mx whip. This would give an overall height of 6 feet odd and increased efficiency, but would necessitate experiments with

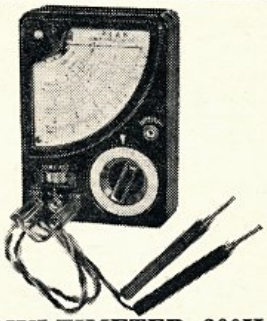
(Continued on Page 18)

PEAK MULTIMETERS



MULTIMETER 400J

DC Volts: 0.5, 2.5, 10, 50, 250 (100,000 Ω/V), 500, 1,000 (35,000 Ω/V).
AC Volts: 2.5, 10, 50, 250, 1,000 (12,500 Ω/V).
DC Amps.: 10 μA., 250 μA., 2.5 mA., 25 mA., 250 mA. (150mV.).
Ohms: 0-2K, 0-200, 0-2M, 0-20M.
Scale Centre, Ohms: 160, 1.6K, 16K, 160K.
Db: —20 to +62.
Battery: Internal 1.5v. x 2.
Approx. Size: 6" x 4" x 2⅝".
PRICE £14/10/0 (inc. S.T.)



MULTIMETER 200H

DC Volts: 5, 25, 50, 250, 500, 2,500 (20,000 Ω/V).
AC Volts: 10, 50, 100, 500, 1,000 (10,000 Ω/V).
DC Amps.: 50 μA., 2.5 mA., 250 mA.
Ohms: 0-6K, 0-60K.
Scale Centre, Ohms: 30, 300.
Capacitance: 10 pF. to 0.001 μF., 0.001 μF. to 0.1 μF.
Db: —20 to +20.
Battery: Internal 1.5v. x 1.
Approx. Size: 4½" x 3¼" x 1⅛".
PRICE £5/19/6 (inc. S.T.)

MULTIMETER 370J

DC Volts: 0.25, 1, 5, 25, 250, 1,000 (20,000 Ω/V).
AC Volts: 1.5, 10, 50, 250, 1,000 (8,000 Ω/V).
DC Amps.: 50 μA., 500 μA., 2.5 mA., 25 mA., 250 mA. (150 mV).
Ohms: 0-5K, 0-50K, 0-500K, 0-5M.
Scale Centre, Ohms: 46, 460, 4.6K, 46K.
Db: —10 to +5, 0 to +22.
Battery: Internal 1.5v. x 2.
Approx. Size: 6" x 4" x 2⅝".
PRICE £10/7/6 (inc. S.T.)

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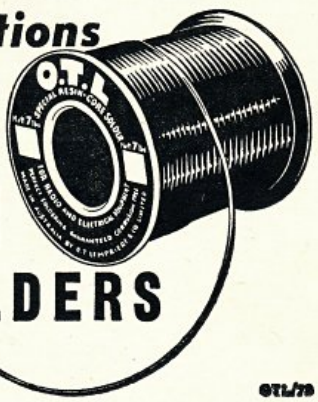

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PEANUTS ON TWENTY METRES

ROBERT H. BLACK, VK2QZ*

WELL, you can never tell what will happen! One evening I thought I would make a bistable multivibrator to be flipped over by amplified ticks from my watch so that I could adjust its speed. The ramifications of this idea led to the construction of binary counters, gated amplifiers, coincidence detectors and finally a tiny computer. But this wasn't all: I had to make a WWV receiver—double conversion, crystal-locked on 10 Mc.—to provide the second pulses for comparison with the pips from my watch. To make the comparison a slow time base, long persistence c.r.o. was necessary: this evolved into a direct display electrocardiograph.

I haven't yet got round to adjusting my watch and some years have passed with time rather inaccurately measured. The 10 Mc. receiver makes a fine rear end for my v.h.f. converters: this meant the construction of a stable tunable oscillator on 40 Mc. and I dabbled with the Tessler circuit and investigated the performance of balanced mixers in the v.h.f. area. I think I have finally got this particular monkey off my back, but it just goes to show how an idle thought can get you involved.

In February of last year I read the article by W3JHR in "Amateur Radio." It was the description of a transistorised v.f.o., and I was off again. I had met transistors before when I once tried to make voice sounds electronically with a photo-transistor and a light beam interrupted by marks I made on a cleared x-ray film. The highlight of that session was the accidental finding that an uncleared x-ray of a chest made a perfect aspirate sound. This, indeed, was my only success: I made some noises like a bushman with laryngitis, but nothing else resembling English voice sounds.

Well, I made up a v.f.o. along the lines suggested by W3JHR and found it extremely stable on 5 Mc. When you have one of these you really have a "synthetic rock"—once you get the 2N384 transistor bases sorted out: these things have four leads, and only three are shown in the circuit. Of course, for long term stability you have to think of the ambient temperature in the shack.

What to do with a v.f.o.? I had a look at a set of FT241A crystals and thought of s.s.b., but my ancient love of 20 metre c.w. stirred again and I headed in that direction. There was, of course, a minor diversion while I looked at a high level mixer, but I got over that.

THE TRANSMITTER

All of this is a rather peripatetic introduction to the description of a small c.w. transmitter which has raised a surprising amount of DX considering that it only feeds a dipole 15 feet high. (The XYL is rather difficult about beams and antenna masts in her garden—on six and two metres I use dipoles in the shack.)

The r.f. section is fairly straight forward and is shown in Fig. 1.

The v.f.o. operates at 4.67-4.70 Mc. It is separate from the main body of the transmitter and is enclosed in a heavy aluminium box. Output from the v.f.o. is amplified by a 6AC7: with a voltage divider supply to the screen a potentiometer in the cathode acts as a drive control to the final amplifier. The plate coil is slug tuned and mounted in a shield can. A second 6AC7 acts as a tripler and is required to deliver 40 volts of r.f. to the grid of the 6146 (QE05/40) and a minute amount of power only. The two 6AC7 stages are built on a 7" x 4" x 2" chassis and the final amplifier on a chassis of the same size. The transmitter is keyed in the cathode of the tripler stage and the filter gives a very pleasant keying characteristic. I found that keying the battery lead of the v.f.o. caused a decided terminal click.

There is nothing unusual about the class AB final except to note that you can get a little more out of it by running into permitted AB2 ratings with 0.2 mA. grid current. (See Philips "Pocketbook for Hams," p.N110). Resting plate current of the final is 20 mA., screen current 0.5 mA., and with the key down these rise to about 100 mA. and 10 mA. respectively.

(See A.R.R.L. Radio Amateur's Handbook, 40th Ed., 1963, p.180, for further details of this amplifier.)

The antenna is fed through an antenna coupler matched up by means of a simple s.w.r. bridge.

THE POWER SUPPLY

The power supply (Fig. 2) uses a bank of silicon diodes (each rated at 600 p.i.v.) in a bridge circuit which provides power for the two 6AC7s, regulated screen voltage, and about 500 volts for the plate of the final. There is also a regulated bias supply. The capacitors between the primary winding and earth are designed to protect the diodes from surge pulses in the mains. The one-megohm resistors across the diodes have also a protective function.

THE CONTROL CIRCUIT

On one memorable night in the British Solomons as VR4AF I put my 7 Mc. crystal into a commercial transmitter and worked a few stations on c.w. I started to send and the receiver went

* 2 Yerton Ave., Hunter's Hill, N.S.W.

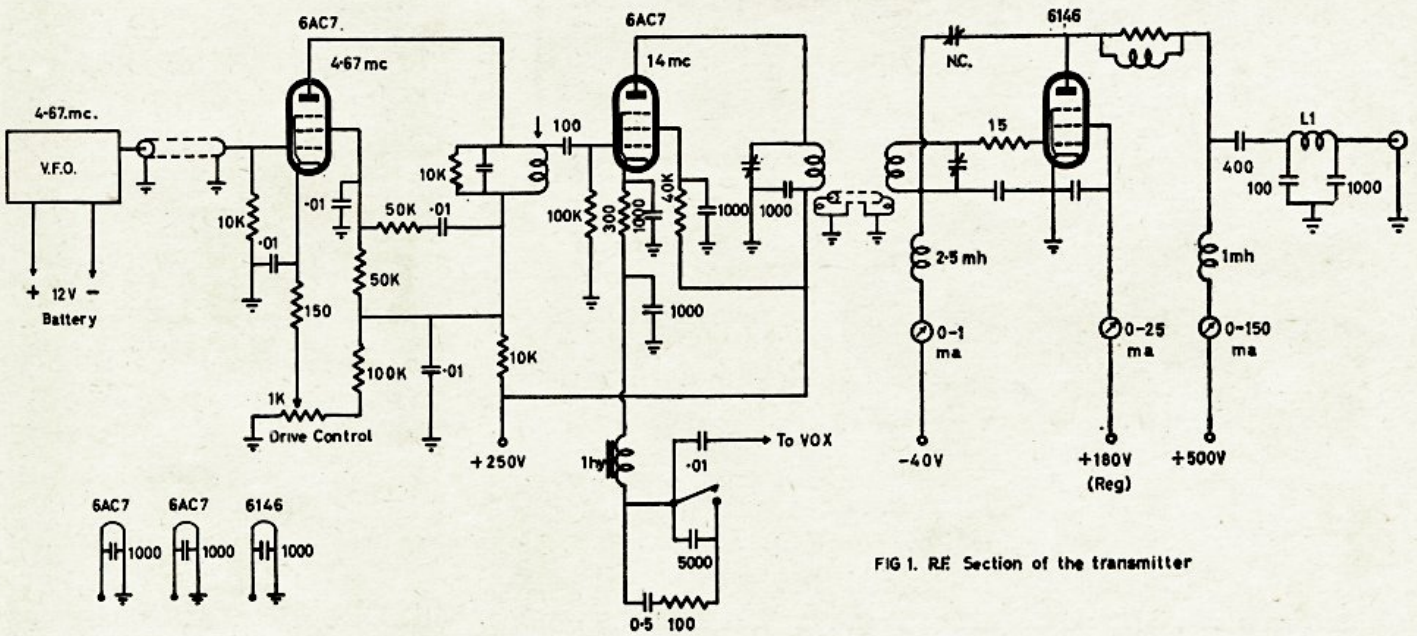


FIG 1. RF Section of the transmitter

off, the aerial was thrown over to the transmitter and the transmitter came on—all with the first depression of the key. I stopped sending and these conditions were reversed. I had been brought up on switches, and this was heaven. In the case of the present transmitter I wondered if I could catch another glimpse of heaven. After a few false starts, I remembered a vox control I had used on s.s.b. way back and which, somehow, had remained intact.

In Fig. 1 you can see that, when the key is depressed, a negative-going pulse can be obtained from the cathode side of the key and each time the key is depressed more negative pulses are produced. The vox-box had inputs from speech amplifier and receiver audio and simple experiment showed which was the correct lead to use—and also that the idea worked. Pressing the key down operated the relay in the vox which in turn switched the antenna relay, turned on the v.f.o. (it **is** battery operated), and disabled the receiver. The vox relay release could be adjusted to hang on as long as necessary between words, and when the over was finished the whole set-up changed back to receive conditions. (See "Single Sideband," A.R.R.L., 1954, p.168, for circuit of the vox. One amplifier and one diode can, of course, be omitted in this application.)

Finally, a spring-loaded switch was placed in the battery lead to the v.f.o. for netting purposes—the amplified fundamental signal on 4.67 Mc. gives just sufficient harmonic output on 14 Mc. for this procedure. If the transmitter is lined up on about 14.05 Mc. it will operate satisfactorily throughout the c.w. band (14.0-14.1 Mc.) without retuning and only slight adjustment of the drive control is necessary.

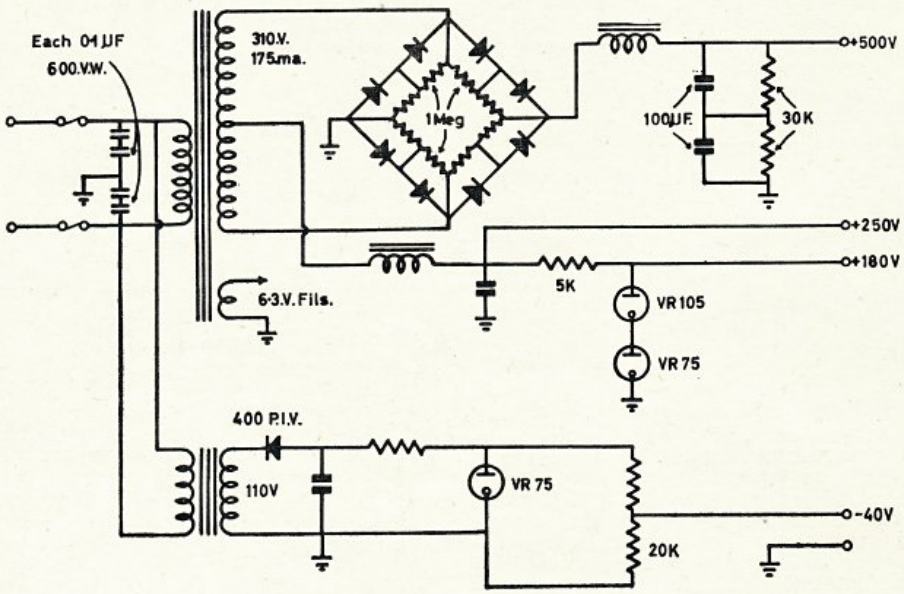


FIG 2 POWER SUPPLY

COMMENT

The signal will not compete with 150 watts and a three element beam, but it has worked through to the east coast of the U.S. and Europe. When I finally get frustrated by the higher powered stations and their beams I'll try a larger final amplifier—there should be enough drive voltage available. In the meantime the "peanut" (as the west coast kilowatters call it) is giving me plenty of amusement, and the XYL can still watch her t.v. set now that I have put a high-pass filter in its feedline. The beam for the t.v. set is out of sight in the attic just above the unshielded transmitter. ●

☆

HOME-BREWED COMMUNICATION MIKE

WALT ROGERS,* W1DFS

THANKS to Al Glines who receives "Amateur Radio" in the Boston area, I have had a chance to read a few copies of "A.R.," which suggest that an article on a home-brewed communication mike may be of interest. Perhaps I can needle cobber George VK4JP so as we can make an occasional contact, as it has been a long time since our "eyeball" QSOs of 1944.

For Amateur communications, the audio range should be about 250 to 4,000 cycles and flat. I like it flat so that no peaks limit our reaching for 100% modulation before most of our voice is at this level too.

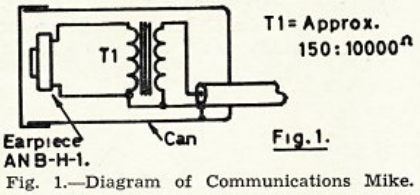


Fig. 1.—Diagram of Communications Mike.

While making many tests on old and new headphones, I noticed that one series was designed for an unusually flat audio response. This was the HS-33 (or the ANB-H-1 separate units). These units are electrically and acoustically adjusted for the desired audio range. My first try was to step up the impedance from about 150 ohms to 10K, with the aid of a surplus transformer costing less than one dollar. This transformer and mike unit were mounted in a small tin can. The shielded lead connected to the mike fitting at the modulator. This works well in place of a crystal mike, but with lower gain—about minus 58, if I remember.

Then came the revelation that the ear pieces of our telephone handsets now are a dynamic unit and might give better output. I was given a couple of these units (not borrowed, really!)

(Continued on Page 18)

* 24 Orient Avenue, Melrose, Mass. 02176, U.S.A.

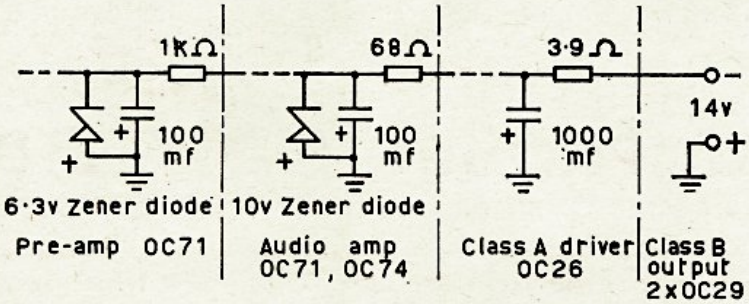
TRANSISTOR MODULATOR TIP

ONE of the main troubles encountered in a mobile transmitter using a transistor d.c.-d.c. converter and a transistor modulator is the "hash" appearing on the common battery supply rail, giving rise to annoying noise on the signal. This "hash" finds its way back to the low level input of the modulator and due to the low impedances involved in the supply rail, it is very difficult to eliminate.

The modulator constructed for my mobile (40 watt Mullard design) suffered from this trouble until a 10 volt and a 6.2 volt Zener diode were included in the circuit shown in Fig. 1. Since these diodes were included the problem has been almost entirely overcome and only when the signal is extremely strong are any reports of "transistor whine" received. These diodes also have the advantage of reducing the tendency for the modulator to "take off" when the battery voltage is low and its supply impedance is higher than normal.

The mobile transmitter uses a 70 watt d.c.-d.c. inverter of Philips design, using OC28s and the modulator is the 40 watt Mullard design using OC29s in the output stage. The transmitter uses an 815 in the final, running about 45 watts input on 52 Mc. Total transmitter battery drain under average modulation is about 9 amps. from a 12 volt supply.

—G. BYASS, VK6ZDB.



TRANSISTOR MODULATOR MODIFICATIONS
(Balance of circuit as per published Mullard Modulator circuit)

Fig. 1.

Your Pye Reporter with a Variable Frequency Receiver

FOR some time now I have been toying with the idea of making the Reporter unit I described some months ago able to receive the stations not on net frequencies.

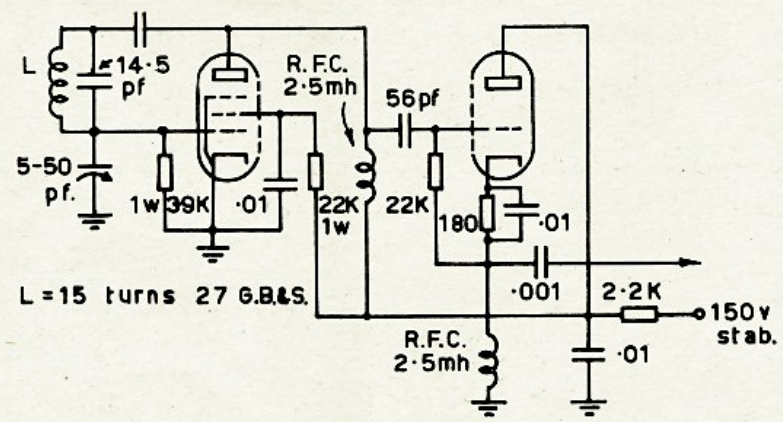
The circuit shown herewith uses a pentode master oscillator and the triode as a cathode follower.

I don't claim the circuit as original, but it is simple to get going, extremely stable, simple to build, and easy to tame.

The output is fed from the oscillator through co-axial cable to the crystal socket, and because one side of the crystal is grounded, the job is so much easier. The crystal is removed and out of circuit completely. The oscillator covers approximately 1.5 Mc., quite sufficient because the top half meg. of the 6 metre spectrum is rarely used.

It will be noted that by virtue of their construction, the Reporters are fairly critical in their aerial and r.f. assemblies. For best results, peak on your most often used frequency and then be able to tune either side of your selected frequency for about 800 kc.

—David Priestley.



Establishment of a 144 Mc. Beacon

A keen group of Darling Downs and Brisbane Amateurs have combined to establish a 144 Mc. Beacon on the Bunya Mts. at an elevation of approx. 3,500 ft. above sea level, and excellent results are expected. The site is approx. 120 air miles west of Brisbane.

The group was started by Noel 4NH, of Toowoomba, who has made a transmitter available for use in the project and also a place to house the transmitter at the intended site.

A lot of work will be necessary before the transmitter is operating, such things as P.M.G. permission, checking, wiring of transmitter and alterations, making up of antenna, automatic keying device.

John 4ZWB and Bert 4CP are doing the necessary checking of the transmitter. Brian 4RX is designing and building the automatic keying device. Mick 4ZAA and Tom 4ZAL are constructing the antenna system.

The transmitter is an Admiralty Type 8C and is in reasonably good order. As soon as it has been checked, it will be re-assembled at John's QTH. It will then undergo on-the-air test transmissions for some time to ensure that it is operating 100% efficiently.

It is not considered a matter of urgency to have it installed on the Bunya Mts. immediately. The V.h.f. Group interested in the project can rest assured the transmitter will be operating from the Bunya Mts. for the next v.h.f. season, but if all goes well it could be operating much sooner.

Valves throughout the transmitter are not usually seen and all concerned consider it unwise to install the unit without a spare and complete set of valves.

If spares cannot be obtained readily the group have come to the conclusion that the transmitter will have to be converted now to easily obtained types of valves. As all v.h.f. Hams would appreciate, this would entail a lot of extra work and hold the project up, and it would mean completely rebuilding the transmitter, etc.

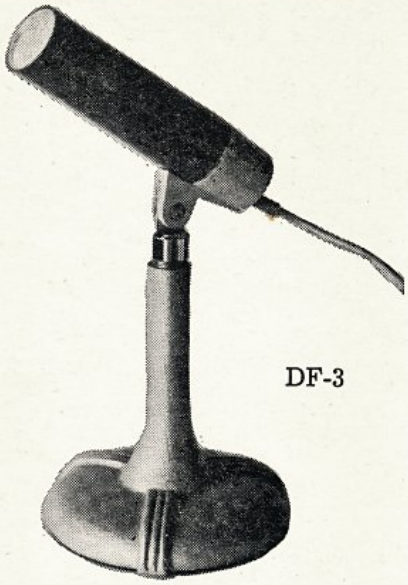
If anyone feels inclined to help the project and have on hand any of the following valves in the junk box, donations would be appreciated. Contact John 4ZWB or Bert 4CP.

The following valves are required as spares: CV187, KT8C, KT66, TZ40, 834 or DET12, 304B, 3-50G2, TBI/60G, VH50. Local offers of valves should contact Mick 4ZAA or Tom 4ZAL. Thanks chaps.

Later on, when all of the work has been done on the transmitter and everything is working satisfactorily, all will be advised of frequency and date of coming into service. Also an address to send reports of transmission to will be arranged.

This Beacon is coming into being in the interest of v.h.f. and will be operated and maintained by those interested in v.h.f. in the interests of v.h.f.

FOSTER DYNAMIC MICROPHONES



DF-3

SPECIFICATIONS:

Output Impedance .... 50 ohms or 50K ohms
Effective output level .... —55 db. [0 db. = (one) 1V. Microbar]
Frequency response .... 50 to 15,000 c.p.s.

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Plastic Diaphragm.
Size: 4½" long, 1¼" diameter.
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Swivel fits 5/8" 26 t.p.i. Stands.
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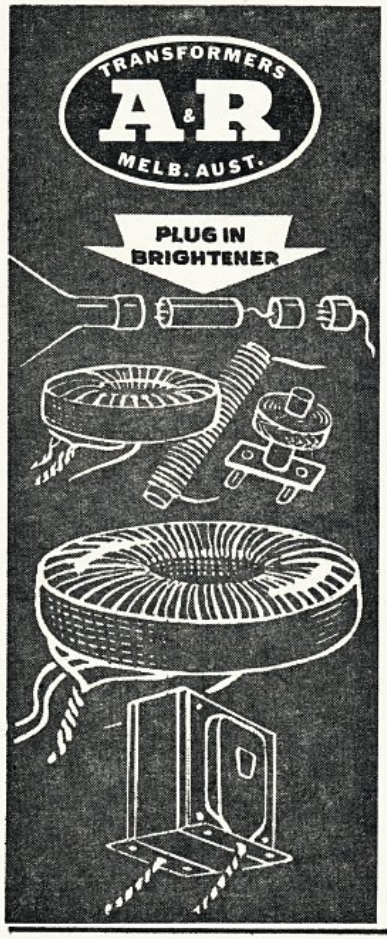

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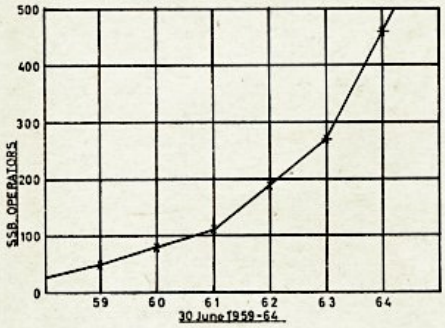
ARE YOU IN THE GROOVE?

LINDSAY DOUGLAS, VK2ON*

Australian stations using s.s.b. equipment at 30th June:—

1959	50
1960	80
1961	110
1962	190
1963	270
1964	462



These figures, gathered carefully by Comps. VK5EF since his advent on sideband, show that increasing numbers of Amateurs are getting out of the groove and applying new techniques to their operating. Other information is that the average age of a sideband operator is 50 years. Maybe that average would be the same for the whole 4,500 Hams in VK. But the point is that the average Ham has had 30 years of operating and has, until recently, used the same procedures in contacts with other stations.

IMPROVEMENTS IN PROCEDURE

What improvements in procedure are demanded by s.s.b. operation if its many advantages are not to be wasted? How easy is it for a 50-year-old Ham to change to new operating procedure?

"VK5XYZ from VK3BCD. All okay Joe, a very good transmission, no trouble at all. You're just booming in here . . ."

"This will be my last over, Bill, I won't bother coming back. VK-5WXY to VK4MNP."

"I'll just get a Roger from you, Mac, on that little point. Break, VK-7LMN from VK2CDE."

Just how redundent are all these words when one uses s.s.b.? All one has to do is ask a question and let go the button.

How good is the memory of the average 50-year-old? Not very good if it's anything like mine. Well then, why not deal with one point at a time and save the memory? I'm not talking about 3, 4 or 5 way QSOs, only two way.

VOX OPERATION

A lot of newcomers to sideband have bought a box and the box has a "vox" but it might as well have a knife-switch considering the way some of them use it. The "vox" is good if it is working well, but can easily be replaced by a push-button or morse-key correctly used. The chief ills of the "vox" are:

(a) Its clicking disturbs the operator.

(b) It hangs on too long, and the first words of the other party are lost.

(c) Its operation is not stable with varying mains voltage.

(d) Receiver muting not fully effective.

All of these deficiences can be rectified by correct adjustment of the "hold" and "anti-vox" controls, using voltage regulation on the control tubes, and muffling of relays with rubber from mountings or box.

What is the ideal length of a transmission on s.s.b. operation?

Would your answer be 5, 10, 20 or 40 seconds? In other words, do you monitor the channel while you are talking? If so, how many times in a minute is this done? I would think 10 seconds answers the first question and five times a minute the second one. How many times have you heard s.s.b. stations "doubling"? How many words are lost upon the ether because of this? The answer would be "very few words" if the five times a minute rule was adhered to.

Have you ever heard Jim telling you all about the article in "QST" when you'd read it right through the previous night? Did you want to stop him and tell him you knew all about it, so as to save his precious operating time? Were you able to do so without waiting 3½ minutes? The five times a minute rule would allow you to get a word in edgeways, then you could ask Jim about something more to the point.

Have you noticed how easy it is to "break" some s.s.b. stations? As you know, this should be done with due courtesy and at an appropriate pause in the conversation, but how valuable is this new facility if only to arrange a sked with an old cobber!

AUTOMATIC GAIN CONTROL

Another desirable feature for the 1964 type of QSO is a.g.c. in the receiver. Those who haven't got it don't know what they are missing. Can a.g.c. function when the b.f.o. is on for sideband reception? Well I admit that in an unmodified BC348 (1944 model) things are a little difficult. However, those who have heard the a.g.c. action in a Drake 2A would not be happy until this smooth feature was incorporated into their own receiver.

What is the use of a.g.c. when copying sideband? Well, you see, the various stations come in at varying strength and, if a VK6 calls you when you're copying a VK3, you want to be able to hear him. The instant-acting, slow-decay a.g.c. system is perfect for copying with this situation. A separate a.g.c. amplifier (see p.95, R.S.G.B. Handbook) produces a very smooth action, effective on very strong signals.

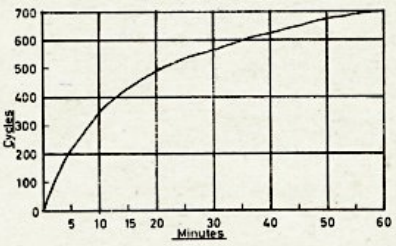
RECEIVER MUTING

Receiver muting connected to the push-to-talk switch may seem an unnecessary thing on which to comment. However, one does meet an occasional newcomer to sideband who is not alive to its value.

FREQUENCY STABILITY

"My set is really stable, I put it on zero-beat and it stayed there all day." This might mean something or nothing. How many of us with black boxes have put them through the hoops to find out their drift rate in the first hour?

"Mine's a Bloggs transceiver and that's the best you can get." Unfortunately there are good and bad specimens among commercial gear and, as we know, every model has approved modifications published every few months to cater for unsuspected minor defects in design. Measuring the drift rate of your model can be done by producing a 500 cycle note, beating the v.f.o. against the crystal calibrator. Then this 500 cycle note is compared with another audio tone from a calibrated audio oscillator. This comparison can be done by ear, or on the c.r.o., and a reading taken every five minutes over the first hour. The following graph is that of an HT32:—



How significant is drift in a sideband QSO? Have you ever heard three stations in QSO on three separate frequencies? Have you ever heard two stations on different frequencies? Can you imagine the effect on s.w.l's and other Hams who may be reading the mail? Drift is very important in s.s.b. contacts for obvious reasons:

(a) Two stations on one frequency take up less spectrum than two on two frequencies.

(b) A drifting station may drift on to another QSO, causing interference.

(c) As just mentioned, it makes the s.w.l's task more difficult.

NETTING

Now with the HT32 as shown, one should re-net every 50 cycles during the drift period and this would be 14 times in the first hour. With a transceiver, the receiver and transmitter frequencies should be identical (not always the case if power supply stabilisation is defective) and here the v.f.o. stability requirement is less exacting due to automatic adjustment in the re-

* 5 Mason's Parade, Gosford, N.S.W.

ceiving mode. For this reason (and others) many s.s.b. men prefer transceivers.

MULTI-WAY QSOs

Are multi-way QSOs on sideband a good thing? Well, they were an excellent idea when there were few sideband stations about. One could always get a QSO by chipping into an existing contact, whereas calling CQ often brought no result (especially if one had a weak signal). These days the multi-way QSO has bad as well as good points. The whole smoothness and convenience of a rapid-fire contact is lost by converting it into a multi-way. However, one should observe that additional persons can join or leave the party with equal facility, proper courtesy being employed. Perhaps one wishes to converse with one of the gentlemen on a matter of personal interest, then it's an easy matter to say "See you up five kc., Joe," and he replies, Roger, excuse me fellers" and the move is effected.

SIGNAL REPORTS

Signal reports are of secondary importance to the sideband operator. One knows by the tone of the answers whether one's copy is QSA5. In fact it is common to forget about reports until the end of the contact and then obtain one for the benefit of the log book. Likewise automatic repetition of messages is bad practice. The other fellow will ask for a report if he requires it. These operating practices were mentioned in a list of rules by VK3AHR in "A.R." several years ago, but the number of sideband operators has quadrupled since then.

Always give honest reports on signals heard, report them as you hear them, mention your receiver, for this helps the other fellow to correctly interpret your report. Please accept the other fellow's report with good grace, he's not trying to be funny, only helpful and isn't that what we want?

Now that s.s.b. signals are dominating the bands, let us have better operating habits, and help show the unenlightened that a code of discipline can be maintained, from which we all benefit.

AUTOMATIC LEVEL CONTROL

Has your sideband transceiver been modified to give automatic level control? Half a handful of parts and a couple of hours' work will do the job. What advantages does this modification confer? It will allow you to concentrate more on the talking and less on the dancing meters. Also accidental flat-topping (with wide signals and needless interference with other stations) is prevented. Most transmitters can be modified easily. This is the simplest form of audio peak compression. Where it is difficult to install, a form of audio compression as used in f.m. transmitters would be fairly effective after proper adjustment. A simple a.l.c. circuit is shown on page 19 of "A.R." for August 1962.

Just take a careful listen on the bands next week-end and see if you observe any of the phenomena referred to. Here's to better, brighter and breezier sideband contacts. ●

CORROSION

WG.-CDR. C. G. HARVEY, VK1AU*

● The Amateur's Code suggests that Radio should not be one's sole interest in life. VK1AU reports how a problem encountered in yachting, found its solution through electronics.

LAST year, after some modifications in VS1, I noticed a new aluminium alloy centre-plate on my International "Snipe" racing dinghy was showing some discolouration near the attachment of its hoist cable.

To a sailor, who is primarily an Amateur, it was soon obvious that the trouble sprang from the effects of dissimilar metals. The alloy plate was attached to its stainless steel shackle by a copper rivet, while the shackle was in contact with a brass thimble, to which a steel cable hoist was attached!

The gaps in the Table do not indicate the absence of a potential difference, such as would be encountered with brass, nickel and copper combinations. Potentials below ¼ volt have been eliminated in pursuit of the corrosion criteria suggested above.

The Table shows that it is difficult to avoid electrolytic corrosion and suggests that our outdoor equipment deserves an occasional inspection.

If you have a meter which gives reasonable indications below 1 volt, test runs can be done on your own bench. Simply use wet blotting paper as an electrolyte, and measure the potential difference across the two sample metals in contact with it. It may take a couple of hours for a steady reading to appear.

Oh the boat? It was cured by replacing the copper rivet with one of mild steel! ●

	Alum.	M. Steel	Lead	Tin	Brass	Nickel	Copp.	Silver	Indium
Aluminium	—	—	—	0.25	0.4	0.4	0.55	0.6	—
Mild Steel	—	—	—	0.3	0.4	0.35	0.3	0.5	—
Lead	—	—	—	—	—	0.3	0.25	0.55	—
Tin	0.25	0.3	—	—	—	—	—	—	—
Brass	0.4	0.4	—	—	—	—	—	—	0.25
Nickel	0.4	0.35	0.3	—	—	—	—	—	0.25
Copper	0.55	0.3	0.25	—	—	—	—	—	0.3
Silver	0.6	0.5	0.55	—	—	—	—	—	0.6
Indium	—	—	—	—	0.25	0.25	0.3	0.6	—

Table 1 (in Volts)

Although the electrolytic effects of adjacent metals was obviously unknown to the VS1 "mandore" who installed the new plate, it was obvious that the installation was "live".

A little research[1] soon showed that quite high potentials could be developed in fresh water, let alone in the salt (?) water of Johore Strait. For those who have noticed similar effects, a few figures might be of interest.

The following table shows the weight lost or gained by 20 square centimetre samples, subject to six months' exposure in tap water:—

Mild Steel ..	lost	16	milligrams
Brass	lost	2	„
Lead	lost	292	„
Tin	lost	3	mg.
Copper	gained	4	„
Aluminium ..	gained	1	„

Based on such physical changes, it is accepted in some quarters, that corrosion will be held to reasonable levels if the maximum potential difference between adjacent surfaces is kept to less than ¾ volt in sealed equipment, ½ volt in normal equipment, or ¼ volt in equipment exposed to "severe" environments (e.g. aerials).

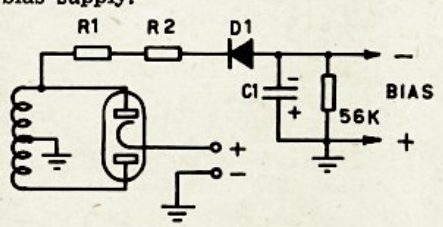
So let us now look at the size of the potential which is generated by a film of fresh water between two dissimilar metals. See Table 1.

* Dept. of Air, Canberra, A.C.T.
[1] Marconi Review, XXVII., No. 152.

BIAS THE EASY WAY

THE battery is the most used source of bias in use by Amateurs today. The system described here is not new by any means, but out of five Hams I have discussed it with, only one had ever used it, and three had never heard of it.

Using this method any voltage can be obtained very easily. Although only half the transformer is used, the balance will not be upset very much, certainly not enough to cause concern. True the voltage is only half wave rectified, but that is quite sufficient for bias supply.



R1, R2—Determined by required voltage drop.
C1—50 μF., 150v. electrolytic.
D1—AA119, OA81, OA95, OA210, etc.

R1 and R2 form a voltage dropping network, whilst R3 is sufficient to "fire" the diode to get it all working.

C1 is a 50 μF. 150v. working electrolytic to "smooth" the voltage.

—David Priestley.

Mr. W. Hayden (seated at mike), M.H.R. for Oxley, officially opened the Ipswich and District Radio Club (VK4IO) by sending greetings and congratulations to Australia-wide Amateurs. With Mr. Hayden are (left to right) Dave Ness (President), Bill Jehn (Publicity Officer), Dave Cooper (club member), Wayne VK4ZBN and Bob VK4LI.

OPENING OF VK4IO

Mr. W. Hayden, M.H.R., officially opened the Ipswich and District Radio Club station with a broadcast message of greetings and congratulations over VK4IO, call sign of the club's station.

The club is divided into two sections—seniors and juniors—and there are 24 members in each section.

The opening ceremony was conducted at the Darling Street residence of Mr. Bob Linskett, the club's class manager, who constructed the transmitter used by the group.

Mr. Hayden, speaking to an invisible audience, the members of which might well have included overseas Hams, said he hoped the members of the Ipswich and District Radio Club would derive much pleasure from their club, and that what they learned as members would be of value to them.

"Amateur Radio is a very enjoyable pastime," said Mr. Hayden, "and does a lot for the betterment of the city."

The President of the club (Mr. D. Ness) said that the aim of the club was to interest boys in the fundamentals of radio, and perhaps give them enough knowledge to be able to apply for a Radio Amateur's licence.

"There are 18 Amateur Radio operators in Ipswich at present," he said.

The Historical Development of Radio Communication

PART FOUR—THE ADVENT OF THE VALVE

J. R. COX,* VK6NJ

CHAPTER THREE

Marconi's successful bridging of the Atlantic with wireless telegraphy in 1901 commenced the present epoch of radio communication. By 1910, with a regular trans-Atlantic system installed, wireless communication attained a state of technical certainty. In hand with this, experimental findings indicated that, as well as telegraphy, speech could be broadcast. Associated though they were, the transmission of the human voice posed distinct problems when compared with wireless telegraphy. Valiant efforts were made by notable pioneers to overcome these problems even before the advent of the transmitting valve, upon which ultimate success depended.

The detailing of the progress made in wireless telephony before the amplifying valve's adaptation is important because it illustrates firstly the tenacity of the early inventors and, secondly, this pre-valve phase cultivated a "know-how", a demand for, and an interest in speech and music transmission. It was in this field of wireless communication that radio later was to find its greatest strength. By cataloguing development a realistic appreciation of the valve's worth, in developing wireless communication, is established. The story of the wireless valve is very largely the story of the development of wireless communication as we have come to know it.

Problems confronting early pioneers of speech broadcasting can be conveniently divided into two categories, namely, problems of transmission and problems of detection. An appliance capable of producing continuous uniform electro-magnetic waves had to be engineered and then these waves had to be manipulated by a voice-operated mechanism to form radio frequency pattern replicas of the spoken words. At the reception end the receiving wireless set had to be quantitative in operation, not merely set into operation by the arrival of electro-magnetic waves, like the coherer, but capable of producing an output proportional to the transmitted modulated radio frequency speech waves. That, then, was the task, and no wonder the comparison of difficulty between wireless telegraphy and telephony was likened to being "not far from that between ruling a dot and dash line and making a dry-point etching of an autumn landscape."[52]

It became clear to early inventors that the achievement of any practical success in the transmission of clear speech depended upon the production of a device to generate continuous, uniform electro-magnetic waves of a high frequency.[53] The plan was to vary the amplitude of this series of constant high frequency waves by impressing on it the instantaneous values of audio-frequency voltage derived from sounds of speech by means of a microphone. This system, later termed amplitude modulation, is still universally used today. Alexander Graham Bell's microphone was adaptable for converting voice energy into audio-frequency voltage and so the search resolved around a generator of high frequency waves.

At first the sole means of generation available was by Hertzian methods and so, naturally enough, attempts to gain the desired high frequencies centred around experimenting with spark-gap transmitters. Research in this direction was led by Mr. W. Duddell who engineered a "musical arc". This device was an arrangement of condenser and inductance connected in series with their terminals attached to **solid** carbon rods of a continuous arc which emitted a note of high pitch. The frequency of the resultant oscillatory waves approximated 10,000 cycles per second.[54]

In 1903 Mr. V. Poulson engineered an improvement when he arranged the electric arc between the end of a thick carbon rod, kept in slow, steady rotation, and a water-cooled rod of copper. The arc, set in a box of coal gas or vapour of hydrocarbon, was subjected to a very strong transverse magnetic field. This was successfully applied to the transmission of speech. Still other contrivances were made to produce the high frequency waves needed. One such derivation, engineered by Telefunken of Germany, used a set of twelve copper-carbon arcs set in series. A reasonably undamped continuous output resulted and was successfully employed for speech transmission.

Opinion was divided on the best way to generate the necessary high frequency waves to carry the speech transmission. One section believed the answer to be spark-gap transmitters, whilst yet another school championed high speed revolving alternators. The use of alternators in wireless communication stems from their initial use in generating alternating current electricity. Alternators were pioneered by Nikola Telsa who, in 1888, used them for powering carbon lamps.[55] A low frequency alternating current caused the lamp to emit an irritating hum. Telsa stepped up the frequency and during his experiments constructed an alternator capable of a frequency rating of as high as 12,000 cycles per second. Wireless experimenters knew that the minimum requirement for speech transmission is in the vicinity of 30,000 cycles per second, so they set about improving alternator design. Modified alternators using flexible leather belts and powered by steam turbines soon became capable of frequencies as high as 75,000 cycles per second. It was an American, Mr. R. A. Fessenden, who successfully put the alternator into use as a mechanical oscillator for speech transmission.[56]

The application of this system to wireless communication was restricted for two main reasons. One was the cost, especially if installed on train or ship, where special provision was necessary to stop gyrostatic action damaging the rapidly revolving bearings as the conveyance pitched and rolled. In addition, the power expenditure to turn the alternator at the necessary high speed was considerable, due to air and bearing friction. Thus, mechanical oscillators were useful in proving speech transmission possible, but in full-scale use were not entirely practicable.

To facilitate modulation of the oscillator's output a microphone had to be coupled to the oscillator circuit. In theory there are two ways of doing this; by direct insertion into the oscillator circuit or in a circuit inductively coupled to it. Either way provides means of controlling the amplitude of the emitted electro-magnetic waves in such a manner that the amplitude varies in exactly the same way, and proportional to, the sound waves actuating the diaphragm of the microphone. In practice this theory was not easy of accomplishment before the advent of the amplifying valve!

The main trouble was that the oscillator depended upon very high voltage, but the carbon microphone could not cope with more than a few volts and about one half an ampere in current. Hence the enormous energy of the oscillator had to be controlled by a microphone, robust enough to withstand excessive voltages and current, yet delicate enough to respond to the relatively weak power of the voice waves produced when speaking. The solution was not to eventuate until the amplifying valve arrived. Before this, in the absence of any device to amplify the microphone's output, microphones were designed to suit the means and many ingenious devices eventuated.

One of these featured water as a coolant to combat overheating, and another used eleven microphones in parallel actuated by the one central mouthpiece. The latter type was used when the microphone circuit current exceeded one half an ampere. This arrangement distributed the current

* Government School, Yornup, W.A.

[52] Ballantine, S.: "Radio Telephony for Amateurs"; Chapman and Hall, London, 1924, 2nd edition, p.12.

[53] High frequencies were necessary to continuously carry the speech pattern. If sufficiently high frequencies were not generated, breaks and interference to the music or speech being broadcast became noticeable. As well, the higher the frequency the shorter the wave length, and, as the most efficient radiation occurred when the antenna was an integral multiple of one half wave length, the use of higher frequencies also gave antennae of manageable size; e.g. a frequency of 1,000 cycles per second would be best served by an antenna 46.6 miles long. At 7,000,000 cycles per second an antenna 133.6 ft. long gives just as efficient radiation.

[54] The importance of Duddell's contribution was that he showed a way to produce a near-continuous high frequency oscillation as against an intermittent series of oscillatory spark discharges.

[55] United States Information Service; op. cit., p.21.

[56] Fleming; op. cit., p.849.

and tended to lessen the alarming effects of carbon heat-up and the objectionable arcing between the carbon granules. Another intriguing example was devised by Professor Majorana, of Rome. Named a "Liquid Microphone," it took advantage of the property of fluid jets.[57] The intensity of jets of slightly acidified water was varied according to the vibration of a voice-actuated diaphragm. The fluid was sprayed onto an insulated cup placed between two electrodes, so that a film of conducting solution, varying in thickness, offered a varying resistance to the passage of electrical current. Variance of resistance caused variance of oscillations in the antenna and therefore of the amplitude of the radiated waves. This remarkable microphone was successfully used and possessed the advantage of not generating heat like the carbon microphone. In addition, it could operate with much higher voltages without the arcing associated with carbon microphones.

Whilst these developments were taking place the receiving side of telephony was also being investigated. By 1906 a United States Army General, H. H. C. Dunwoody, discovered that a mass of carborundum held a unique property of value to wireless communication.[58] This property was the abiilty of the carborundum crystal to rectify by virtue of its unilateral conduction. Furtherance of this line of investigation is associated with the names of two experimenters, Professors Pickard and Pierce, who observed unilateral conduction in other substances such as hessite and anatose. General Dunwoody was the first to apply this special property of crystals by using one as a detector of wireless waves. By employing the crystal in a receiver circuit, using headphones, he was able to detect telephony and telegraphy. Selectivity was poor, but this, in the early days of wireless, was no drawback due to the comparative paucity in number and wide spacing of transmitters.[59]

Another form of detector attracting notice in the first decade of the 20th century was the "Ionised Gas Oscillator Detector".[60] This item was destined to have a pronounced effect upon the future rise of wireless communication. It originated from a "plaything" put aside by no less a renowned inventor than Thomas Alva Edison. The early history of this device really precedes Edison's interest in the subject, since as early as 1873, the connection between heat and its effect upon electricity was being investigated. This preliminary work formed the basis for a more detailed study of the phenomena associated with the emission of electricity from hot bodies. Also Elster and Geitel had conducted systematic investigation on the subject between the years 1882 and 1889 and their work did much to advance the discovery of the vacuum tube.[61] These two men arranged a metallic filament and a metallic plate within a glass bulb which was evacuated of air using a vacuum pump. They then connected a battery to the filament and regulated the temperature of the filament by varying the current passing through it.

Subsequently they discovered that the plate received a positive charge of electricity which increased in value as the filament temperature was raised to yellow heat. If the temperature went beyond that point, the positive plate charge decreased until, at white heat, the charge was very small indeed. Later Elster and Geitel also discovered that the electrification of the plate depended upon factors such as the nature of the gas inside the bulb and the actual substance forming the filament as well as upon the temperature of the filament. These preliminary investigations into thermionic currents were not directed specifically towards perfecting wireless valves, but they were the initial step towards them.[62] These two experimenters had, in fact, established that there were thermionic currents and that basically the current could be controlled by filament composition, heat and the nature of gas through which the emission occurred. The establishment of these basic facts was an essential step and of fundamental importance.

In the year 1883 Thomas Alva Edison, whilst experimenting with his newly invented carbon incandescent lamp, took investigations into thermionic currents a step further ahead. It was then that he found that if the plate was connected through a galvanometer to the positive terminal of the battery heating the filament, the galvanometer registered current which seemed to flow from the positive side of filament to the plate and then through the vacuum to the heated filament. Apart from confirming the work of Geitel and Elster, Edison's importance in this field of research is his establishment of the fact that hardly any current flowed around the circuit when the plate was connected to the negative battery terminal. Thus he founded the principle that the plate must be positive in respect to the filament for flow of thermionic current. Another most important aspect was his finding that the current would flow in **one** direction only. These peculiarities were given the name of "Edison Effect". They pointed the way to the use of a similar device as a unilateral conductor for detecting electro-magnetic waves. Thomas Edison did not concern himself with this significance, however, and indeed he gave several of his bulbs to a visiting English engineer, Sir William Preece,[63] to take home and "play with."[64]

TWO-ELECTRODE VALVES

Sir William Preece was an associate of Professor J. A. Fleming, who had, for several years, been keenly following the progress of wireless communication. It was Professor Fleming who realised the possibility of developing Edison's device for use in wireless wave reception. Modifying the bulb arrangement into a more suitable form, Professor Fleming called his device an electrical valve[65] because of its ability to permit electrical current flow from filament to plate but **not in the opposite direction.** Professor Fleming then utilised this property of his thermal electrical valve to separate the positive and negative constituents of an electro-magnetic oscillation emitted from the antenna of a wireless transmitter. In this way the positive currents may be said to be sifted out and allowed to pass while the other set of currents were withheld by the valve. The emitted waves then formed a pattern capable of operating a telegraphy recorder or a telephone earpiece.

Thus the first thermionic valve entered wireless communication in 1904. Its successors were to have a dramatic influence upon the future development of wireless.

Marconi used Fleming's valves as oscillation detectors for wireless telegraphy early in 1905 after Professor Fleming had patented the device in November 1904. Later Fleming improved the emissive qualities of his two-electrode valve through superseding the carbon filament by a tungsten one which could be heated to a higher degree and nearer to the critical temperature discovered earlier by Elster and Geitel.[66]

For some two years the two-electrode valve remained at this stage and wireless communication languished for the want of a device to amplify weak signals, amplify weak voice currents for successful modulation and generate an unbroken uniform stream of high frequency electro-magnetic oscillations.

THREE-ELECTRODE VALVES

When Heinrich Hertz illustrated the properties of wireless waves in 1888, a young man, then fifteen years old, may have heard of the incredible demonstrations. This youth later studied at America's Yale University and received his doctorate for a thesis on Hertzian waves. He was Lee de Forest, later the inventor of the three-electrode vacuum tube. This dynamic device revolutionised wireless communication and made long distance radio part and parcel of everyday life. The world learnt of the new vacuum valve when Dr. de Forest announced his "Audion" in 1906.[67]

The Audion, designed by Lee de Forest, consisted of three electrodes; filament, plate and a third called a grid inserted between the first two. All were enclosed in an evacuated glass tube with external terminals. The purpose of the grid was to control the flow of electrons from filament to plate. When the grid voltage was made slightly positive in respect to the filament, the

[57] Ibid., p.859.

[58] Ibid., p.472.

[59] The influence of this early work with crystal detectors on the development of the transistor is explained in the next chapter.

[60] L. Zehnder used such a device as a detector of Hertz oscillations before this in 1892, but only experimentally. Fleming, op. cit., p.476.

[61] Preliminary investigations into the phenomena of thermionic currents were started by F. Guthrie and then by Elster and Geitel (see footnote 62). Scott-Taggart, J.: "Thermionic Tubes in Radio Telegraphy and Telephony"; Wireless Press, London, 1924, 2nd edition, p.1.

[62] Elster and Geitel's work was even preceded by F. Guthrie who noted the effect of a red and white hot metal ball upon an electroscope in 1873. Scott-Taggart, op. cit., p.1.

[63] Sir William Preece was Engineer-in-Chief of the British Government Telegraph Service in the General Post Office.

[64] Lemon and Ference, op. cit., p.403.

[65] Fleming, op. cit., p.478.

[66] See Appendix 2, Principles of Vacuum Tube Operation.

[67] Scott-Taggart, op. cit., p.58.

grid assisted greatly the attractive force of the plate. This important factor accounts for the tremendous magnifying effect of the three-electrode tube.[68] Here, then, was the appliance to amplify weak signals and voice currents and, with its coming, wireless communication awoke to vast new horizons. It was indeed the keystone of modern wireless.

Apart from the tremendous fill-up given to wireless development, the introduction of de Forest's Audion valve had two other sidelights. One of these was the appearance of some uniquely designed valves, mainly evolved to circumnavigate the bonds of patent rights and also to capture the imagination with something "new". One valve had its grid outside the glass envelope but still between filament and plate. Another used two **metal plates** arranged on either side of the filament—one used as a plate and one as a metal grid. These and other arrangements preserved the action of de Forest's triode valve.[69]

The other sidelight was the development of litigation between Fleming and de Forest. Professor Fleming claimed that de Forest's valve was not an essentially different invention from his own two-element tube. On the other hand, Dr. de Forest asserted that his valve was the result of his own research. Controversy reigned, but the fact remains that de Forest was the first to insert the third element in a vacuum tube. Called a grid, this element made his valve capable of producing amplification whereas Professor Fleming's was not.

The German Telefunken Company was amongst the first to use the principle of de Forest's discovery. Their design was unique because the anode did not take the shape of a disc or plate, but consisted of a spiral of aluminium wire. The dimensions of this valve are historically important because they provide a standard to judge today's trend towards valve miniaturisation. The valve measured fourteen inches long and was four inches wide. At first the general tendency was to cement the glass bulb in an insulated base and connect the electrodes to a bayonet or screw-type socket which fitted a plug on the wireless set baseboard. Introduced later were plugs in the form of split pins which fitted into special valve holder sockets. The plugs were made so that the valve could only be inserted the correct way; this practice still prevails, although, as valves had more elements added, the additional safeguard of a lug on the valve base with corresponding slot on socket became necessary.

One of the failings of the first valves was that they were **soft**. That is, they were not highly evacuated and contained residual gas. As a result their plate voltage tolerance was low with about thirty volts the maximum. Application of a voltage above this critical value caused the gas in the valve to ionise which, in turn, caused plate current to rise rapidly and the valve literally burnt out. This defect made the earliest valves unpredictable in action and needful of very careful voltage adjustment. If valves were to improve in amplification and efficiency the inventors needed to devise a **hard** valve—one capable of high voltage operation.

The man to accept the challenge and eventually overcome the defect was Langmuir. He dispelled the earlier contention that gas was indispensable to valve operation. It was earlier thought that the thermionic currents were caused by some chemical action between the filament and its surrounding gas. Irving Langmuir proved, however, that a high vacuum **did not stop** the thermionic current and that in fact high voltage operation was possible under vacuum condition.[70] This work was further advanced when better evacuation methods became available. Improved pumps gave a better vacuum to the valve, and this was further advanced by the development of a process called "gettering". A small plate holding a portion of magnesium was fitted inside the valve bulb and after evacuation the magnesium was electronically ignited causing reaction with any remaining gas, so that the valve became "harder" still and so more stable in operation.

This increased the scope of application of the valve, which, up to the time of the First World War, was confined to use in radio receivers. It now became standard practice to use Fleming's diode as a detector feeding its output into the de Forest triode for amplification. This system of detection and amplification is retained to the present; even transistor receivers use the same combination. Thus the two antagonists, Fleming and de Forest, were to see the results of their experimentation and legal battles utilised in harmony—side by side.

VALVE OSCILLATORS

There was another very important property of the three-element valve yet to be recognised and applied to radio communication. That was the property of self-oscillation and regenerative amplification, and about the initiation of the use of this property controversy still exists. Lee de Forest, E. H. Armstrong, J. L. Hogan, A. Meissner and Irving Langmuir all claim the distinction.[71]

This property of the three-electrode vacuum tube consists of transferring some energy back from the anode of the valve to the grid circuit. By judicious arrangement of a circuit, it was found possible to feed back the correct proportion of energy from plate to grid to keep the valve oscillating. This means of initiating self-oscillation was introduced near to the start of 1913 and proved of tremendous value, both for the reception and generation of continuous, uniform electro-magnetic waves. It was to prove the answer to the problem of breaks in continuity of speech, met with in spark-gap transmitters used for telephony. Thus by 1914, because of the valve, wireless communication had increased its efficiency and range. The onset of the 1914-1918 World War furthered this state of utility, as the demand for improved systems arose.

TETRODE VALVE

Valves were first used for wireless telephony at the start of the war, and, in 1914, several systems were put forward for the generation and modulation of continuous waves. Radio telephony was responsible for the insertion of the fourth element in the valve. This occurred in 1916.[72] The General Electric Co. inserted a second grid to further improve means of modulating. This innovation increased the amplification efficiency of the ordinary triode tube because it corrected a noticeable defect in their behaviour. This defect was two-fold; instability caused by inter-electrodal capacity which itself caused unwanted reaction between plate and grid circuits.[73] The capacity also had the effect of increasing the space charge near the plate and this congestion of electrons reduced the amplifying efficiency of the valve. The four-element valve was later termed a tetrode and still finds use in wireless communication.[74]

Thus the First World War proved a stimulant to wireless communication and at its conclusion a good standard had been attained. Telephony, with valve oscillators and modulators, had proved successful. Continuous wave transmissions had been used with the resultant advantages of less power expenditure, less local interference and with greater range when used in conjunction with regenerative receivers. Indeed, it is recorded that the first German Broadcasting Service began in May 1917 when music and news were broadcast to troops on the Western Front.

When the conflict closed, scope existed for the peaceful adaptation of techniques developed under the stimulus of war. In 1919 daily, experimental, speech transmissions commenced in Germany at Konigswusterhausen and reports of reception came in from Moscow, Sweden, Holland, Britain and Yugoslavia.[75] Just one year after, the American presidential election results were reported by radio for the first time. In the same year Dame Nellie Melba sang on the English radio network and was heard in Milan, Italy.

PUBLIC BROADCASTING

Just as Marconi's trans-oceanic telegraphy stirred public interest, so did these, and other telephony broadcasts over distance, catch the imagination of all. The enthusiasm of the public engendered a demand for valves and parts to build receivers. Commerce, not long released from defence contracts, was able to supply components at reasonable cost.

Wireless valves, although used in regenerative receivers made available to Amateurs in 1916, however did not

[68] See Appendix 2.

[69] The "triode" was the name given to a three-electrode valve by W. H. Eccles. This term persists today. Scott-Taggart, op. cit., p.58.

[70] Langmuir's work extended over 1914 and his patent for a "hard" valve was issued in July 1914.

[71] Scott-Taggart, op. cit., p.288.

[72] Ibid., p.376.

[73] Edwin Howard Armstrong also discovered a way of combating this defect of triode valves. His system is known as "neutralisation".

[74] The space charge is a cloud of negative particles of electricity occupying the space between filament and plate electrodes. C. D. Child first explained the space charge in 1911. Scott-Taggart, op. cit., p.9.

[75] Gartmann, op. cit., p.154.

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7. BUILT-IN CARRIER SUPPRESSION (No panel adjustment necessary).
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9. E-Z Vue Dial—BETTER "ON-THE-SPOT" Frequency Check—Great for mobile operation, allows Freq. Check with MINIMUM DISTORTION.
10. ACCESSORY REMOTE V.F.O. provides DXing, NET Operation and "SPLIT-FREQUENCY" use. (No Transceiver should be without one!)

* Write for detailed information.

FIVE-BAND TRANSCEIVERS

Feature Numbers:	1	2	3	4	5	6	7	8	9	10
GALAXY V.	X	X	X	X	X	X	X	X	X	X
COLLINS KWM2			X	X	X		X			X
DRAKE TR-3	X			X	X		X			X
NATIONAL NCX-5				X			X	X		X
SWAN 350	X				X					

THREE-BAND TRANSCEIVERS

GALAXY III.	X	X	X	X	X	X	X	X	X	X
NATIONAL NCX-3								X		

DID YOU KNOW?

GALAXY III. & V. TRANSCEIVERS:

- Have the most r.f. power output of any Transceiver of this size! SSB/CW.
- Are the smallest in size of any 5 or 3-Band Transceiver.
- Are the most easily adapted to mobile operation. (Less than one cubic foot of space needed.)
- Has the finest six-crystal Lattice Filter available in any Transceiver. With a filter width of **only 2.1 kc. at 6 db.**, and **only 3.8 kc. at 60 db. down.**
- Have receiver sensitivity comparable to any receiver available today, regardless of price, and better than most. Remember—receiver sensitivity is **better** than ½ μV. for 10 db. S/N.
- Have one of the finest Dual Attack and Release A.v.c. Systems available. Makes the receiver, on frequency, virtually block-proof on the strongest signals.
- Have an average of 8 to 10 db. of A.l.c., which aids in preventing flat topping and distortion of the transmitted signal.
- Have carrier suppression **in excess** of 45 db. and unwanted sideband suppression **in excess** of 55 db.
- Have selectable Upper or Lower Sideband, on all Bands.
- Are the only transceivers available, which incorporate the exclusive EZ VUE DIAL for minimum visual error of frequency Read-Out while operating mobile.
- Are manufactured with the strictest possible quality control. Each unit is individually subjected to rigorous tests that exceed any normal use for which intended.
- Have been tested and demonstrated (at A.R.R.L. National Convention, 1964, New York City) at full output (200 watts into an accurate dummy load) for over five minutes, with continuous c.w. carrier, without loss of power output or damage to tubes or components.
- Full uniform output on all Bands, 10-80 Metres.
- Have shifted carrier CW for best CW operation.

GALAXY III. plus 240 Volt AC Power Supply
plus External VFO, Australian production - - - **£275**

GALAXY V. All-Band Transceiver, 1,000 Kc. on 10 Metres - **£300**

SIDEBAND ELECTRONICS ENGINEERING (ARIE BLES)

33 PLATEAU ROAD, SPRINGWOOD, N.S.W. **Phone Springwood 394**

become freely available until 1921.[76] This action motivated the remarkable period in wireless communication "when the wonders of wireless broadcasting seized the imagination of the people."[77] During this time, roughly from 1921 to 1931, valve production soared from 101,960 to 49,325,410 in the United States of America alone. Enormous quantities of other components were marketed and full-scale production of complete sets began.[78] A wireless craze hit the world and cultural life changed as man entered into the new stage of his existence—the stage of public broadcasting, brought about by the advent of the wireless valve. With it public broadcasting and long range telephony were made possible.

By 1938 direct speech transmissions between Australia and America had been tried and between Australia and Europe were commonplace. Because of the overwhelming influence of the thermionic valve, wireless communication by then had developed to the stage where it had "annihilated distance and banished isolation, and banded together the peoples of the earth closer than a crowd in a room."[79]

SUPERHETERODYNE RECEIVER

In terms of the thermionic valve and its application to the advancement of wireless communication, one man's contribution is outstanding. An American born in New York on 18th December, 1890, Edwin Howard Armstrong began experimenting with radio receivers while still at school.[80] His boyhood interest led to a lifetime of service devoted to the science of wireless communication. He first came into prominence with his development, in 1913, of the regenerative circuit. Apart from beneficial factors already presented, this arrangement made loud-speaker reception possible. Five years later, Major Armstrong evolved the superheterodyne receiving circuit which tremendously improved wireless receiver sensitivity, quality and amplification. This type of receiver circuit is still universally used in ordinary domestic-type receivers.

Two other important processes in the development of radio communication were invented by this man, who became a Doctor of Science, Columbia University, in 1929. One was the super-regenerative circuit which made for greater amplification and high frequency short-wave broadcasting. Television systems use his other important invention of frequency modulation[81] for audio transmission of programmes. Frequency modulation is unique because it eliminates static. Major Armstrong was indeed a great pioneer of wireless communication and many of his contributions to the science form the basics for today's excellence in radio. He died in 1954 at the age of sixty-four.

Edwin Howard Armstrong's life encompassed the years of the thermionic valve's dominant influence in the development of wireless communication. During his time the valve had been discovered, improved, utilised to the full and then shown signs of decline as a governing factor in the future of radio. The improvements noted over the years were the development of the hard valve, increased emission capabilities, more efficient collection of electrons at the plate and lessening of valve size.

Increased emission was secured by making filaments from thoriated tungsten which also had the advantage of optimum emission at a lower temperature than pure tungsten. A still more efficient emitter was discovered in the nickel base sprayed with a mixture of the alkaline earth metals such as calcium and barium. Better control and collection of electrons emitted came with the insertion of the suppressor grid and the development of beam tetrodes—a valve with four elements and deflecting plates to beam electron flow.

The problem of annoying receiver hum developed by filaments heated by alternating current was resolved with the advent of indirectly-heated valves. In this type of tube the emitter is a cylinder enclosing, and insulated from, a heater consisting of a thin spiral of wire, much like a miniature household radiator, which heats up the emitter to start electron emission.

Just before the 1939 war an effort was made to reduce valve size and this factor, together with the adaptability of dry-cell battery supplies, contributed towards the introduction of an era of portability in wireless communication. By 1945 valves had been made the size of a lipstick tube and radio had entered the phase of portability proper. Even so, with all the innovations thermionic valves were not entirely reliable.[82] The battle against long distance had been won because of them, but the struggle for reliability had not.

[76] American Radio Relay League: "The Radio Amateur's Handbook"; Rumford Press, Concord, New Hampshire, U.S.A., 1930, 6th edition, p.6.

[77] Randell, W. L.: "S. Z. de Ferranti and His Influence upon Electrical Development"; Longmans Green and Company, London, 1946, new edition, p.15.

[78] United States Bureau of the Census per notice from State Library, Perth, W.A.

[79] Mr. W. M. Hughes, Minister for External Affairs, Australia, speaking at the Convention Banquet, World Radio Convention, Sydney, April 1938; Institute of Radio Engineers Aust.), op. cit., p.6.

[80] From a four-page booklet issued in honour of "Edwin Howard Armstrong, 1890-1954" by the Institute of Radio Engineers, 1954.

[81] Whilst the I.R.E. booklet claims that Armstrong invented the system, the basic principle of frequency modulation—the variance of frequency in accordance with the intelligence—was known just prior to 1914 but **not practised**. Major Armstrong was the first to conceive the idea that "frequency modulation might be a better system from the standpoint of noise discrimination" and he was the first to practise the theory of frequency modulation. He experimented from 1925 to 1937 and his work "resulted in an acceleration of the development in this field." The quotes come from Nilson and Hornung: "Practical Radio Communication"; McGraw-Hill Book Company, New York, 1943, 2nd edition, pp.388 and 389.

[82] Valves suffer the disadvantage of failing because of the extremely high operating temperature of the filament, which, like a light globe, eventually burns out. It has been said that "over ninety per cent. of the failures of electron tube equipment is due to the failure of the electron tube". "Transistor Fundamentals and Applications," a 43-page journal issued by the Radio Corporation of America and printed in Camden, New Jersey, U.S.A., 1958.

APPENDIX 2

PRINCIPLES OF VACUUM TUBE OPERATION

The Diode

With filament heated and plate voltage switch open, the filament emits small particles of matter called electrons. The electrons tend to concentrate in the vicinity of the filament.

When positive voltage is applied to the plate the negative electrons are caused to be drawn over to the plate (Edison Effect) and an electronic stream commences to flow.

The Triode

For a given filament temperature the current passing from plate to filament in a diode depends only on the difference in potential between them. By the insertion of a third electrode, in the form of an open wire mesh, amplification becomes practicable. Just as the plate attracts electrons when it is positively charged, so will the third element, called a grid, if a positive potential is applied to it. The electrons attracted towards the positive grid speed up and most will shoot past the open grid to the plate and thus increase current flow.

Because the grid is nearer to the filament than the plate, it is better placed for attracting the electrons. The result is that one volt positive on the grid has a larger effect on the plate current than one volt positive on the plate. For example, an increase of one volt positive on the grid may have as much effect as ten volts in the positive plate voltage.

A similar type of control exists when the grid is negative; if the negative grid voltage is reduced by one volt, it may have the same effect as leaving the grid voltage unchanged and increasing the plate voltage by ten volts.

In either case the valve is said to have an "amplification factor" of ten. No matter how feeble are the fluctuating positive or negative voltages applied to the grid, a relatively larger effect on the plate current results. Thus even very weak signal impulses applied to the grid will produce relatively large plate current variations. It is in this action that the triode has the ability to amplify feeble wireless signals.

☆

Publications Committee Reports That . . .

Correspondence was received from the following: VKs 4ZPL, 3ZFB, 5GD, 5ZEW, 5NO, 2QZ, 3XQ and L5067. In addition technical articles were received from VK5BI and D. Priestley.

Many copies of "A.R." are being returned to P.O. Box 36 as "not known at address". Readers of "A.R." should notify any change of address about two months in advance, if possible, so that by the time the change has been put through the system "A.R." will be forwarded to the correct address. Members of the W.I.A. should notify their Divisional Secretary and non members should notify "A.R." direct. By attention to this matter your files of "A.R." will be complete.

Arrangements are currently being made to print a monthly Prediction Chart and this will be commenced as soon as plans are completed and the blocks are ready.

Readers will note an addition to the VK5 notes, and in fairness to 5PS it must be stated that he was unaware that this postscript was to be added. The Committee considered that this special note is so typical of 5PS that all should be permitted to know of it, and laugh with, not at, VK5PS.

Attention is drawn to the Oscar Project and it is suggested that if you have not your equipment fully prepared by now you make way for the serious experimenters.

All f.m. net users of Channel A (145.854 Mc.) are requested to keep this frequency clear at all times, except in emergencies, whilst Oscar III. is operative.

By your co-operation you will assist a serious Amateur experiment of great importance.

It is interesting to note the interest caused by the article on "Lasers" plus the fact that readers noted errors in this series. A comment upon one letter is appended and is not intended as an unappreciative remark upon the subject. This comment arose during our meeting and caused a laugh, hence it was reprinted.

Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

R.D. CONTEST RULES

Editor "A.R.," Dear Sir,

From time to time participants in the Remembrance Day Contest are asked to make suggestions with the object of, if possible, making improvements. Perhaps if you could publish the following letter, some interest might be engendered in the appropriate quarter.

During the last three Contests I have observed the Contest during the full period and wish to suggest a change in the rules. I believe this suggestion to be an extension of Leith Cotton's suggestion of two years ago.

I believe that three faults exist in the Contest at present:—

(a) There is, generally, no opportunity for Limited Licensee participation.
(b) The points range between the various States is much too wide.
(c) There is not quite enough activity to keep an efficient operator busy; during the last few hours of both Saturday evening and Sunday afternoon everyone seems to have worked everyone.

Fault (a) needs no comment, and in any case this was the point covered in VK5GL's suggestion.

Because of fault (b), it is just not worthwhile wasting time making contacts for one point each, when other contacts are worth five or six times as much. There should be some difference, of course, particularly in a few years' time, when shorter skip allows easy contact with nearer States, but at present a VK3 is always passed over, given a choice, for a more valuable contact. This discriminates against the larger States.

Allowing for conditions, the number of contacts made by the leading stations increases each year, but for a Contest of this type one would expect contacts to be made at the average rate of thirty or forty per hour.

The cure for these faults would be to increase all the points' values at present given for Interstate contacts by one, and to allow one point for an Intrastate contact. This would allow v.h.f. operators, using the three common v.h.f. bands, to make a reasonable score, and the extra v.h.f. activity should increase the possibility of Interstate contacts. Exactly the same argument applies for 1.8 Mc. On the h.f. bands the number of contacts that could be made would be increased without adding to the QRM.

There should be a separate section for v.h.f. only operation, as there is for c.w., phone, etc.

This suggestion has been discussed with several of the R.D. higher scorers and they all seem to be in agreement. It has already been made individually, some years ago, to the Contest Committee by VK2AHM and myself. I have tried to reach the Contest Committee through the "correct channels" to no avail. Possibly this letter may enlist some support from others more active or successful in Contests than I am.

Let's face it—at the moment it would be difficult for a VK5, VK6 or VK0 not to make the highest score; it is apparently only because of a lack of activity organisation that S.A. does not win the Contest each year. Therefore, in all fairness, this suggestion should come from this State and not from one of the larger States.

Another point in the rules that might be considered is the question of log-keepers. There is nothing in the rules at present to suggest that, as well as all operation, all log-keeping and other miscellaneous station functions should be done by the nominated operator himself. In some overseas contests this is specified, and A.R.R.L. have stated that it is understood in all their single-operator contests. To have an assistant log-keeper has become almost universal in the R.D., among the higher scoring stations. This is a little unfair on some country station operators, who cannot get help, but it does add to the enjoyment and atmosphere of the Contest as a whole. "Loggers" could be either banned or encouraged, or perhaps a "multi-operator" section introduced.

However, this last paragraph is merely an observation—the alteration to the points system is the important one.

—L. H. Vale, VK5NO.

LASERS

Editor "A.R.," Dear Sir,

I wish first of all to commend your magazine for the informative articles such as the one on Lasers and the Historical Development of Radio Communication.

However, as I have often found in the past with articles of this nature, it is often wise to double check some of authorities to whom discoveries are credited.

In another technical magazine I found an item on Lasers. It was recent (December 1964 issue) and pointed out that among the 1964 Nobel Peace Prize awards was one "for original research work which led to the creation of the Quantium Generators and Amplifiers known as Lasers and Masers."

This Nobel award for Physics was shared by three scientists—Nicolau Basov and Alexander Prokhorov, both of the U.S.S.R., and Charles Townes, of the U.S.A.

I am sure that other readers would, like myself, have assumed that, as pointed out on page 17, column 1, Theodore Maiman had invented the Laser using Ruby.

Obviously this was at best very misleading. Of course it is possible that the writer of the article did not intend such an assumption, but it was bound to be made and it is obviously not justified by the facts.

After all, only one award can be made for original work which led to the development of Lasers and Masers.

I have for a long time now been aware of the parallel scientific work being done in many countries, even if some of "A.R's" contributors and probably readers are not, and it demands of all of us as scientific and objective assessment of the results of this research work, not something narrow or partial which ceases to correspond to truth.

—V. H. Richardson, VK3XQ.

* * *

Editor "A.R.," Dear Sir,

In the January 1965 issue you printed part 1 of an article about Lasers. Unfortunately this article does not explain why such a device produces light with a narrow frequency band.

Normally the optical atomic transitions mentioned have a spread of about 1,000 Mc. However, the Laser with mirrored ends behaves much like a long piece of transmission line. Clearly only certain frequencies are permissible. That is those with a voltage node on the mirrored surface.

Now, when some noise radiation inside the band of frequencies of optical transitions passes between the mirrors it excites transition and hence the wave grows stronger as mentioned. It should be remembered though that only those frequencies for which the distance between mirrors is an integral number of half-wavelengths can be amplified. Normally several such frequencies exist within the bandwidth of the optical transition.

Apart from this point, I believe that the article is very good and should help a few VKs get to know something about Lasers. One day they may even use one!

—P. J. Wilsen, VK5ZEW.

[Is it all done with mirrors?—Ed.]

* * *

Editor "A.R.," Dear Sir,

In your January issue of "Amateur Radio" you published an article on Lasers which was reprinted from "CQ," August 1964.

I now wish to point out some errors in this article which I have already pointed out to the Editor of "CQ". In fact not only have you reprinted the drafting errors in the "CQ" article, you have also added some extra ones.

On page 18, third column, line 14 (Jan. issue) Ei should be EI. Likewise in Fig. 4 drawing, and caption to same.

As you can see from the corrections I have made, you have made all the Ei and EI, Ei; in fact due to this, one error in "CQ' has been corrected.

I feel that unless these corrections are made anyone reading the article cannot gain full understanding of how Lasers work as this diagram is really the most important one in the whole article.

—G. C. Ramsay, VK5GD.

RADIO PHRASES

Editor "A.R.," Dear Sir,

As an XYL about to embark on her studies for an Amateur Operator's licence, I have discovered that several well known radio phrases have lost their original meaning. I feel that other beginners may benefit if I list a few of the phrases here, with their new meanings.

XYL—Provider of infinite number of cups of tea and coffee.
"I'm using a simple dipole"—I'm using a 6-element beam.
"Just a little ol' home-brew I knocked together"—I have a KWM2.
"QSY 5 down"—Anything between 5 and 10 kc. up.
"I will QSL"—Send me your card first.
QRX—Hold on a minute, mate, can't you see I'm talking to someone else!
"Yaw signals are fading"—I'm fed up with this QSO.
"I'm going QRT"—I'll wander down the band and see if I can't find some rare DX.

Hope these will prove helpful!

—Helene M. Schroeder (Mrs.).

☆

HOME-BREWED MIKE

(Continued from Page 6)

for a go on what they would do as a microphone pick-up. And I can vouch that this unit does a swell job of it. Your ear piece may be even better.

The circuit is simple—see Fig. 1. The transformer can be almost any line or mike to grid transformer, even a small output to speaker transformer will do. I mounted the transformer with small machine screws—even an adhesive or potting compound may be tried. The ear piece may be wrapped at the edge to fit tightly and stuffing placed so that it is held securely against the cover. The cover required several holes and two small pieces of window screening so the voice might enter freely and the unit held in place.

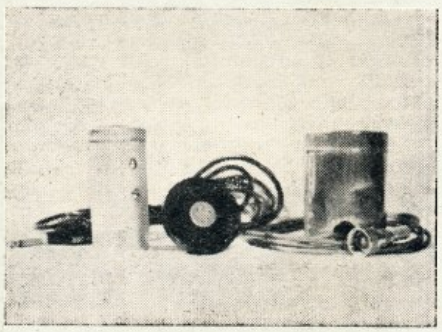

Fig. 2.
Left: Mike using ANB-H-1. Centre: ANB-H-1 ear piece. Right: Mike using new unit.

Place a grommet in the microphone cable hole to protect the lead wire. I didn't bother to paint the cans as I demonstrate their ruggedness by driving tacks with the completed mike—wonder if many of the crystal units would take that abuse? See Fig. 2 for the finished mikes.

The mike with the telephone handset has much more gain. It is wonderful to have such a rugged mike in the shack or for mobile use, as it is almost completely waterproof and shockproof. ●

— . . . —

THE MINIWHIP

(Continued from Page 3)

an Antennascope to bring the base impedance of the combination to the 25-ohm figure.

My thanks go to Joe Reed, VK2JR, for theoretical and practical help in this project, because without a doubt, the success of multi-band Helicals is tied to the correct matching of their base impedances and without Joe's help in the balun department, this venture would not have been successful. ●

D X

VP4, OA4, BV, ZM7, 7GI, FP, AC5, MP4, ZC6, TY2

Sub-Editor: H. A. BEHENNA, VK5BB,
14 Stanley Street, Crystal Brook, South Aus.
ADDRESS CORRESPONDENCE FOR THIS PAGE DIRECT TO THE SUB-EDITOR

Well I hope that 1965 has started well for all of you, DX and otherwise. All have probably made resolutions of a sort. I wonder how many of these still remain unbroken. I wonder how many of us have made resolutions regarding our Radio hobby. Too often on the air I hear disparaging reports about the state of the bands, etc., and the non-availability of the DX. Fellow Amateurs, it's there for one and all for the taking. Instead of complaining bitterly, we all should improve our little set-ups and make our own station as efficient as we can. Remember, we can only get out of our hobby as much as we put into it. Let's be progressive and cut out the wingeing.

We will dispense with the run-down of each particular band this month, as enough knowledge can be gleaned by reading through the notes and reports on this page.

WHERE TO LISTEN AND WHEN

Senator Barry Goldwater has been an Amateur since he was 13. His first call was W6BPI. Today his call sign is K7UGA and he favours s.s.b. mostly on 14 megs. He also holds the rating of command pilot and the rank of Major General in the U.S.A.F. In the family are four children.

4X4NNW is a YL station in Israel, operated by Dvora Sha Al, who is a school teacher at Haifa.

VP7DD is the call of American W5DZF, who is operating from the Atlantic Missile Range in the Bahamas.

SM5BMN is the call of Barbara Nord, at Linkoping in Sweden. She operates a.m. and s.s.b. on 20 and 80 mx. She speaks fluently German, French, English.

PY4AP at Horizonte, Brazil, favours 40 mx c.w.; has home-brew 150w. and has worked over 100 countries.

KS6BN, now active from Pago Pago, is ex-KH6AFJ. Not been active for some time, but making up for it now.

HP1JC is Juan Chen from Panama, on 14 megs., using Collins-Globe Champion TH4.

I1AMU of Italy says he expects the Vatican station HV1CN to be available on Sundays on 14 megs s.s.b. around 1900z.

VK9RB and VK9RH are on Norfolk Island, VK9WP at Nauru, VK9DR at Xmas Island.

YN3KN is active on 7 Mc. from Leon, Nicaragua. Operator is Jack Kelly Murphy.

Also on 7 Mc. W8EMD has three 30 ft. towers in a triangle which he switches—all are mounted on insulators.

5A2TJ of Libya is now back in the States and has the call W5GIT. For the two years in Libya he had 5,000 contacts.

VP8HY is reported to be active on 14 and 21 megs., from the South Georgia Islands. VP8HU is active from Deception Island, 7 Mc. c.w.

6O1WF after 11 years in Africa is leaving to return to Kansas.

Active from Malaysia is Danny Lockyer, 9M2LO, known for his DXing in '47-48. Older members will recall him as MD1D and later as ZC1CL. 14 megs. s.s.b.

With a 200w. tx and an antenna range of quad, dipole, yagi, long-wire and ground-plane, DM3RBM is active 3.5-144 megs.

OA4PF is a good contact from Lima, Peru, with 180w. on 14 megs. s.s.b.

9N2RM, Ron Marschke, is operating from 2 Sqdn. R.A.A.F. at Butterworth, Malaysia.

Frenchman Marcel le Brun, 7X3CT, is heard on 7 Mc., located at Colomb-Becher in Algeria, Nth. Africa.

W6BB operated from the University of Berkley, California, s.s.b. preferred.

Quite an impressive line-up of Collins gear is in use at YV5AHR, the station of Luis Rios at Caracas, Ven. KWM2 Collins station control, and a 30-LI linear, Mosley TA33 ant.

WB6DEX heard on 21396 with a good copiable signal working VKs at 0100z.

VR2DI, Ben Smith, at Suva, Fiji, has been giving the boys some good contacts on 14 megs. s.s.b.

KL7AQ from Anchorage, Alaska, puts in a nice signal with his Ranger of 75w. and a ground plane antenna.

W1WLZ has a new tribander, a new 3-el. vertical for 3.5 and is going after D.X.C.C. on this band.

In answer to requests from thousands of Hams throughout the world, Project Hope has completed the installation of 7G1H, a land-based station in Conakry, Guinea, so that DXers may claim a new country after having worked the station. Virgil Bowers, WA2WUV/HC8CA, flew over to Guinea with a Hallicrafters SR-150, SX117, beam and rotator, received official licensing for 7G1H, and set up the equipment in the Seamen's Club in Conakry. 7G1H will be used primarily as a DX station and will be manned by Virgil and other licensed Hope personnel with sufficient activity over the next eight months to take Guinea off the "countries wanted" list. This is good news for those Hams who contacted Jon Schmitt, W8BZB/7G1, but were unable to claim a new country because he was operating aboard the S.S. Hope, anchored at dockside. As usual, with Project Hope, QSL cards, cards for the new station 7G1H should go to K8BPO, Harold Charvat, 207 Mandel Lane, Prospect Heights, Illinois.

From Don L2022, the following: Here in Albury I have found 20 metres right at the peak of its form, on rare occasions as good as it was in 1958; plenty of DX remains on 40 despite the intrusion of so many commercials. A small portion of the countries heard: **40 Metres c.w.:** UA9RQ, YO8CF, HA5AW, JA1KGT, Ws, BY1PK, YO4RF, YO4KBG, YO-5KAI, XE2AAG. **15 Metres c.w.:** UD6KAB was the only station heard.

20 Metres c.w.: ZP5LS, VR2ER, VK4TE (Willis), UL7CT, G3FGM, VU2PB, UJ8AC, SM5CZQ, KS6BL, EL0B/MM, VS6FO, PY1NFC, ON5HR, GC2, FK8BG, OH4NS, OH7PJ, UW-9OW, LA1CA, GW6YQ, PY2BKO, HA5AK, KC4USX, ZS6BKV, OZ5DX, HA5KFR, VR2DK, OA4PF, LU2DAW, UB5CK, F8FE, PY5OE, UL7PK, OK1KA, UA4IB, UD6KAC, VS9OC, UB5ART, HK7UL, HK3NQ, **UO5BM, HP1IE,** DM2AND, UH8AE, UN1BK, AP5HQ, CE4AD, FO8AQ, UM8AP, DU1OR, VS9MB, ZP5LS, OH-1XX, UI8LB, VK9RB plus the usual Pacific and American bases, etc.

20 Metres s.s.b.: You name it, I heard it. Gs, DU1SV, 9M8EB, SV0WR, OA4KY, SV0WFF, HS1I, HC2JT, OE1MFW, ON4BZ, YV5BB, HC-5NW, HS1HS, KG6IG (Bonin Is.), LU2DAW, VR1G, ZS8H, LA4ZC, VU2BK, HS1NM, HL-9TY, YV5BPJ, KW6EJ, UA3KBD, KH6CMM/KB6 (Canton Is.), VK9DR would be the pick of the s.s.b. DX heard here, realising that the AR7 is not the ideal rx for s.s.b.

One interesting point on 20 mx of late—and all the above 20 mx listings have been made between 0800 and 1200 GMT—is the number of stations coming through here on short skip. VK2 and VK3 stations not normally heard here on 20 are rocking in 5 x 9, in particular VK2EO has been putting a magnificent signal here on 20 c.w., also VK3XB.

STATIONS WORKED, ZONES HEARD, ETC.

From David Rankin, VK3QV, c.w. worked on 21 Mc.: DL3CM, GI3IVJ, HM5BZ, HM5CO, JA1NJX, OH1TN, OH5VF, OH7OK, UA3GM, UB5ARTEK, UA0GF, OE5CA, 5H3JI (1400z). S.s.b. worked on 21 Mc.: G3SVF, GW3TCV, HB9ZI, I1LCF, I1LCK, JA1DUB, JA4ABY, JA-6BI, KM6BI, KH6FCU, WA6HXG, F2LO, and SM5CO. WA4 was heard very weak on long path approx. 1330z. A.m. worked on 21 Mc.: DU1FR, DU1MR, JA1IIX, and ZC4AK was heard but not contacted. Tnx David, keep this band open OM.

Ken VK3TL has worked on 14 Mc. c.w.: EL2DA, OR4VN, VQ8BV, 4W1H, 9X5MW; on phone: K2JGG/JY, MP4BEK, PZ1AX, SV0WF (Rhodes), VP7NY, XW8AZ, YK1AA, 6O6BW, 7X7AB, 9X5MH. Ken's best QSLs: LU9CK, PZ1BW, ZC5AJ, 9A1ZG, CN8GB, ZS2ML, and CR6EI. Tnx Ken, cheers.

BEST CARDS THROUGH VK5 BUREAU:

UW0IX, UL7CH, UO5PK, UA2AC, HM1AX, LZ2FN, PY3AHJ, IT1AGA, OZ4PM, GI6TK, CT1DJ, F9RY/FC, HC8CA, 4W1B, YN3KN, VP2LS, VP2MM, OA4AO, OA4PF, YV5BVR, YV5AHR, HB9ET, UB5ARTEK, UO5PK, UA-2KAK, VE6AKP, K5HGF/KL7, YO7DL, DU6TY, YU3CCD, HB9IK, YV5AMV, W9WNV/KG6, HL9KH, KC6BO, 5B4GT, 5Z4IV, PZ1AX, HC-1EL, YJ1MA, HK3RQ, HP1IE, EP2DM.

INTERESTING QTHs

OR4VN—Via OR4VN.
9X5MH—Via DL1ZK.
4W1H—Via HB9ACD.
EL0B/MM—Via HB9AA.
ZS8H—Box 1729, Johannesburg, South Africa.
HC5NW—Box 55, Cuenca, Ecuador.
WB6ARW/MM—John Knapp, 2545 East 5th, Long Beach, California, U.S.A.
SV0WH—Via W5GMS.
VP3HAG—South Mackenzie, B. Guinea, S.A.
HC8FN—Via WA2WUV.
FG7XV—Via W2CTN.
4U1SU—Box 11, Geneva, Switz.
SW0GG—Via K1EAT.
4W1E—Via HB9ZW.
4W1G—Via HB9NL.
SV0WF—Via W2PCJ.
9M8EB—Ed Brogden, Simangang, Sarawak.
5N2CKH—Box 2609, Lagos, Nigeria.
FM7WQ—Via W4OPM.
KH6EDY—U.S.C.G. Loran Station, Navy F.P.O. 3080, San Francisco, U.S.A.

Cheers till next month. Thanks to the following: Hallicrafters U.S.A., VK3QV, VK3TL, Don L2022, VK5RX and VK2JZ. 73, Bert, VK5BB.

W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. New members and those whose totals have been amended will also be shown.

PHONE

Call	Cer. No.	C'nt-ries	Call	Cer. No.	C'nt-ries
VK5MS	24	310	VK2ADE	65	231
VK5AB	45	310	VK2JZ	61	224
VK6RU	2	306	VK6KW	4	211
VK6MK	43	297	VK3WL	14	211
VK3AHO	51	296	VK3ATN	26	204
VK4FJ	21	283	VK4HR	12	192
		Amendments:			
VK3TL	62	187	VK3TG	48	132
VK2APK	64	147			

C.W.

Call	Cer. No.	C'nt-ries	Call	Cer. No.	C'nt-ries
VK3KB	10	327	VK2AGH	71	268
VK3CX	26	305	VK6RU	18	262
VK2QL	5	301	VK3AHQ	79	254
VK4FJ	29	298	VK3ARX	66	247
VK2ADE	81	298	VK2EO	2	245
VK3NC	19	286	VK3XB	75	238
		Amendments:			
VK2APK	76	222	VK3TL	78	197
VK3RJ	42	221			

OPEN

Call	Cer. No.	C'nt-ries	Call	Cer. No.	C'nt-ries
VK2ADE	28	322	VK3AHO	76	299
VK6RU	8	311	VK3NC	77	287
VK4FJ	32	307	VK3HG	3	274
VK2AGH	83	301	VK3JA	43	252
VK2ACX	6	300	VK7LZ	23	242
VK6MK	74	299	VK2VN	18	238
		Amendments:			
VK2APK	82	228	VK3TL	85	222

S W L

Sub-Editor: Chas. Aberneathy, WIA-L2211
30 Urunga Parade, Miranda, N.S.W.

Well I guess by now all of our members have settled down to their various chores once again after the festive season. I do trust all had a very enjoyable time.

Early in January my XYL and self spent a week in the VK3 capital and had the pleasure of meeting a few of the s.w.l. members in that area. I would like to thank all for the hospitality shown to us during our short stay there.

DISTORTION

We all seem to have a pretty good idea of what distortion is, since we have all listened to the tinny, squeaky, and unnatural sounds of miniature radios, the noisy, crackling and tortured ones coming from an overloaded table model, and the boomy, and screechy ones being projected from so-called high fidelity record players. Being aware of this knowledge of the average radio listener (or should we say sufferer), we have talked about distortion being produced in amplifiers by "non linear" operation. But in order really to know what we are talking about we have to analyse distortion more closely according to the various forms it may take.

Ideally, if some waveshape that is an exact electrical representation of a sound passes through an audio amplifier completely unmodified, except as to amplitude, there is no distortion and the amplified output from the speaker will sound exactly like the original (provided, of course, that the speaker does not introduce any distortion). In practice a reproduced sound never sounds like the original even with an ideal amplifier and speaker. For one thing, a speaker is not a musical instrument and can never reproduce the sound distribution of a symphony orchestra, or even a grand piano. Another reason is that sound is usually reproduced by a single channel from one microphone through one amplifier and one speaker, while we listen with two ears. This time difference with which sound strikes each ear of the listener produces a realism of depth, which permits us to tell approximately where each sound is coming from. This effect cannot be reproduced by single channel reproduction, but has been simulated quite successfully by so-called stereophonic reproduction devices.

The three main types of distortion are frequency, phase or time delay, and amplitude or non linear distortion.

Frequency distortion is the limitation in the audio bandwidth caused by the amplifier coupling elements.

Time delay distortion is the unequal delay of different audio frequencies caused by phase shifts in the amplifier coupling elements. Frequency distortion in conjunction with time delay distortion produces poor transient response in an amplifier.

Amplitude distortion of the output waveform of an amplifier is caused by non linear operation, such as, plate current cut off, and grid current flow. Curved tube characteristics also cause amplitude distortion. Amplitude distortion results in the production of harmonic frequencies not present in the input signal. These cause distorted sound.

NEW SOUTH WALES

Not such a good attendance at our January meeting, but I guess that owing to our members being on holidays, this was only to be expected, and after all are once again settled back at their various chores, we should be at full strength. All are welcome at No. 14 on the third Friday in the month.

Sid L2258 now has a CR100 as well as an AMR300 rx. This is a very handy set-up as that second set is always a valuable asset.

Arnold L2291 in the near future hopes to erect a 60 ft. tower to take an inverted vee antenna. That printer let me down badly, and I trust that you were able to get local quotes to your satisfaction.

Alan L2——. How is the AR8 performing in Dubbo? I rang our Sec. re your number and by now you should have same. Keep me posted of your doings in that area.

Jerry L2229: By now those books are in Adelaide, and no doubt a letter of thanks from the club in that area should be coming your way. I know that they were well received.

Bruce L2283 sends a very impressive list of DX.

Ray L2287, at recent session, logged HC, 5A1, KH6, JAs and Ws. Thanks for the information re the JA S.w.l.

Don L2022: Pleased to know that you are coming nearer to Sydney, and I wish you and yours well on the change over. By your log book you certainly have had a quiet year, but your new QTH should be more favourable than the old one. Don sends the QTH of 9M8EB—Ed Brogden, Simanggang, Sarawak.

VICTORIA

During my recent visit to VK3 I tried to purchase a lighthouse from a certain s.w.l., but he refused to co-operate. I met with more success when one night I snooped around a house in Thornbury, where I went to see how this chap managed to always have so much to report each month. Yes, I found out all right, but I'm not telling (magpie).—Chas. L2211.

With the passing of 1964 we note that the number of our members going after their ticket decreased on other years and only three were successful. Perhaps 1965 will be a better year. The Victorian S.w.l. Group would welcome any interested persons to attend their monthly meetings held at 478 Victoria Pde., East Melbourne, on the last Friday of each month, commencing at 8 p.m. The Group proposes to continue to have technical visits throughout the year, as well as the monthly radio constructional night which keep so many of the fellows' sets in operation. The experiment of compiling notes for the Sunday broadcasts and having one of our members read them over the air has been most successful—a few volunteers to do the reading each Sunday morning would help spread the load a bit. The January and February meetings produced many familiar faces missing during the latter part of 1964 because of exams. and study.—Ian L3006.

Eric L3042 sends his statistics for 1964. Log entries 13,027, heard 148 countries in 37 zones. Sent out 1,181 reports to over 100 countries. Received QSLs from 121 countries in 36 zones. Heard 44 mobile marine (ships). Heard 27 car mobiles. Heard two aeroplane mobiles. To the end of December 1964 had made 287,876 log entries in 38 years' listening. Now if only Collingwood could win the V.F.L. final, hi! Nice to have met Jean and yourself, and I send my regards.

Greg L3138: It was my pleasure re that APC matter, and the information in your reply was reward enough.

Warwick L3211: Welcome to the page OM and I trust that you will continue to pen your doings. Warwick uses a home-brew rx of 10 tubes and sent a long list of DX heard. Tnx for your letter OM.

Colin L3188: Pleased to hear that you have moved to VK2. We seem to be getting quite a few L3s here lately. I wish you well with your A.O.C.P. course, and your new job. Keep me posted with your doings at your new QTH.

Lloyd L3141: I'm always glad to hear from you, be they few and far between, hi. When in Sydney phone as per number given.

Roger L3158/VK3ZRY: Nice to hear from you OM and many thanks for that offer of assistance, which I shall make known in the next issue as space will not permit at the moment. Pleased to add you to the DX Ladder.

Harry L3102: Many thanks for your letter OM, also your kind offer of assistance, which I can certainly use in the near future. Keep writing whenever time will permit.

Maurie L3055: It is my pleasure to once again add your name to our page. Really I thought that you had forgotten my QTH, hi. Sorry to have deleted you from the ladder and that I did not have the time to see you when in VK3. Still pleased to know all is well.

Noel L3101: We were very impressed by your set-up at No. 101, also by the hospitality shown during our recent visit, and offer sincere thanks to Gwen and yourself. That letter from VK9NT has been sent to the Editor and should be of interest to s.w.l's.

QUEENSLAND

Lew L4020: Many thanks for those suggestions, but I'm afraid that space would not permit. What's this I hear, you baking 40 bread rolls and them only lasting 10 minutes, hi! Okay on your G5RV antenna as it should give you very good results.

SOUTH AUSTRALIA

Alan L5065: For mobile work Alan uses a 10 transistor rx and seems to have a lot of fun. That small beam looks the goods to me and I may try it in the near future. Congrats. on the Joburg Award.

Tony L5073: I trust that the explanation of the QSL Bureau was to your satisfaction, and the books for the club were of some value. If I can be of any assistance to the club just pen your request.

Tim L5067: You are certainly having fun with those antennae, well there are plenty of designs to choose from. The sample of your new card looks very nice indeed and the price could not be better.

Brenton L5069: I was very pleased to have had the opportunity to have met you and Graham on your recent visit to Sydney. You might keep me informed re the radio club.

WESTERN AUSTRALIA

Bryan L6028: I suppose by now that you have the 5 element beam up and you are in business with the R208 rx on 6 mx.

Alan L6029: Your new antenna should be ideal and I hope that it brings plenty DX.

Geoff L6030: You lads over in the West seem to get amongst the DX. Geoff heard on 15 mx: SM6, 5A1, LX1, OE1, LA1, whilst on 20 mx DU9, PY2, SU1, M1B, FR7, 9M4 and YV4.

Peter L6021: I shall certainly tell you of my pre-amps. capabilities when it is finished, at the moment it is in the same place as yours, hi. Don't forget to let me know re that suggestion of the L6 area.

TASMANIA

Greg Johnston: Many thanks for your support from VK7, it is much appreciated. Your rig sounds very interesting with the inverted vees, 4-tube converter to a 9-tube rx—all home-brew. I can well imagine how study takes most of your spare time, still it is most important these days. During Dec., Greg netted some 60 countries—nice going OM.

I am indeed grateful to those members who are taking time to pen me a few lines, plus offers of assistance. It is rewarding to find that each month a few new ones are adding their piece to our page and I trust that they shall continue to do so. 73, Chas L2211.

Cards from VK9NT: Noel L3101 forwarded the following memo from Norm VK9NT:

"Would you please notify all members of your club that the usual way to obtain my QSL card is to write to my QSL Manager, who is W2CTN, Jack Cummings, Amityville, N.Y. 11701, New York, U.S.A. He has all of my Mt. Hagen cards, and I have very little of my Rabaul cards left.

"The job of making up a copy of my log is quite a big one, and it creates a bigger job when you have to also give a list of QSL cards received during the month, complete with full QTHs and number of I.R.C. received, plus the I.R.C. have to be included with the log, and eventually finishes up quite a bulky letter.

"I do not QSL via the Bureau, as I have things so organised that every card should come through W2CTN, and if the S.w.l's wish to have my card badly enough then they have to spend the price of a stamp, even though it may only be for surface mail.

"As you may realise, the demand for the VK9 card is very heavy, and not only does it become expensive, but occupies at least two thirds of your time if you do your own QSL chores. I know, as I had to do it before I had a QSL Manager. This is something that the average s.w.l. does not realise, and I feel sure that once it is brought to his notice, that he may realise why he sometimes does not receive a card.

"My suggestion is that he listens long enough to make sure whether or not the station he is listening to has or has not a QSL manager. I feel sure that if you were to advertise this information, a lot more fellows would receive satisfactory results. I can assure them that they will receive a hundred per cent. QSL if they do as I request as far as my station is concerned."

S.W.L. DX LADDER

	Countries Conf.	Countries Hrd.	Zones Conf.	W States
E. Trebilcock	285	293	40	50
P. Drew	153	257	35	31
D. Grantley	126	282	39	35
M. Hilliard	91	241	33	14
M. Cox	89	225	33	23
G. Earl	81	159	32	11
L. James	73	164	30	13
R. Kearney	70	146	32	—
C. Aberneathy ..	65	105	33	14
W. Smith	58	167	27	7
N. Harrison	56	176	31	37
A. Raftery	29	132	15	6
R. Harrison	18	70	16	5
R. Oats	17	40	13	—
B. Prosser	16	136	8	2
B. Mackintosh ..	10	55	10	1

V H F

52 – 144 – 420 – 576 – 1296 Mc.

Sub-Editor: LEN POYNTER, VK3ZGP,
14 Esther Court, Fawkner, N.15, Victoria
ADDRESS CORRESPONDENCE FOR THIS PAGE DIRECT TO THE SUB-EDITOR

Another DX season and Ross Hull Contest has ended and the bands have returned to the pre DX activity, though the DX is still there. Activity in the Melbourne area was down on previous years, no doubt due to t.v. problems. The best band openings into Melbourne appeared to be after 5 p.m. and this prevented many from operating, except of course VKs 3ZNC, 3ZNJ and 3ZPC who hibernated to Mt. Buninyong near Ballarat to keep out of the t.v. sets in Melbourne.

Most States were well represented. No VK9s were heard or worked to my knowledge. VK8KK provided a good signal from Alice Springs with 8ZMD at Darwin holding up that position (8ZDI and 8ZCX being out of town). VK0 at Macquarie Island was heard on a number of days but have no knowledge of any contacts being made. ZLs were scarce in VK3, but apparently VK2 and VK5 worked quite a few. ZL t.v. was absolutely paralytic in Melbourne on occasions but no ZLs heard.

144 Mc. produced some good openings. The "usual" VK2-ZL openings occurred (refer to VK2 notes). VK4ZWB worked VK3ZJQ and VK7LZ. ZL3AQ heard a VK3 during the VK2 opening. This was probably VK3ZER, however we are not sure at this stage. Then VK5ZHJ worked VK6ZCN on 8th Jan. which looks like being a new VK record.

432 Mc. has had its share of attention with the distances being lengthened each week. Firstly VK3AEE to VK5AW last year, now VK3AEE to VK7LZ, 282 miles approx. on 14th Jan. in the wee hours. This band is becoming very popular in Melbourne, Adelaide and other centres. VK2ZBJ was mobile in VK3 earlier and worked VK3AEE over some 30 odd miles.

Made a quick trip to Adelaide just after the Contest concluded and met quite a few of the Adelaide Amateurs. Met 5ZDR, 5JQ, 5ZCZ, 5ZEJ, 5AO, 5RO, 5ZDA, 5ZMJ together with 2ZFB and 8ZCX. Thanks to 5JQ and XYL for their generosity during our stay and also to 5ZDR and XYL for their assistance also. Worked a few from 5JQ's f.b. QTH and felt very envious of the fine location and absence of Channel 0 which complicates us all in Melbourne and, of course, soon in Brisbane. Came back through Mt. Gambier and unfortunately only met 5ZLS who told me of activities there. Then on to Ballarat via 3ZER. Saw his fine set-up and looked over his Ross Hull log which looks like taking the honors for the current Contest, with 8KK probably a close second.

Just a word to all correspondents re the notes for the coming year. Please ensure that they reach me by the 2nd of each month. The job is much easier if they arrive on time. Often they arrive after the deadline for my notes to reach the Magazine Committee and consequently they cannot be printed.

432 Mc. schedules being observed between VK3-VK5-VK7, each day until further notice (all times E.A.S.T.):—

8.15 to 8.20 p.m.: 3ZER, 3ZDM to Melbourne.
8.20 to 8.25 p.m.: Melb. to 5AW and Ballarat.
8.25 to 8.30 p.m.: 5AW to Melbourne.
8.40 to 8.45 p.m.: Melb. to 7LZ (7LZ tuning).
8.45 to 8.50 p.m.: 7LZ to Melb. (7LZ 433.3).
9.30 to 9.35 p.m.: Melbourne to 5ZDR.
9.35 to 9.45 p.m.: 5ZDR to Melb. (5ZDR 432.6).

All 432 Mc. equipped Amateurs are invited to participate in these schedules Other directions and times can be made with any of the stations listed or 3AEE in Melbourne. Best of luck to all those concerned. How long before a Melbourne-Adelaide QSO on 432 Mc.? 73, 3ZGP.

NEW SOUTH WALES

50 Mc.: Very good openings around Xmas-New Year, but declined rapidly after this.

144 Mc.: Activity improving again—possibly helped by New Year Field Day.

432 Mc.: Moderate activity. Les 2ZBJ portable at Wagga worked Eddie 1VP portable on Mt. Franklin in the A.C.T.—approx. 100 miles. Les was using a tiny halo on his car.

A Xmas Party, preceeded by a short fox hunt, was held at the home of David 2ZVW and Max 2ZH. It was most successful with about 70 people attending.

In Dec.-Jan. there were a number of very good openings to ZL on 144 Mc. from the Sydney area. Some stations worked a number of different ZLs and call areas.

The New Year Field Day was most successful with about 12 stations portable in the field. The best contact was 440 miles from David 2ZVW portable at Bald Hill in the Snowy Mts., to Paul 2ZPJ portable at Point Lookout in Northern N.S.W. Signals were S9 with little fading from 8 a.m. to 11 a.m. when operation ceased. 432 Mc. would have been interesting.

Paul was also worked by Peter 2ZZW, also on Bald Hill. Peter was using a 522 tx and rx and 7 el. beam—not bad work! The winner for the contest was Lance 2ZKP, assisted by John 2ZAV.

The V.h.f. Group is holding a new type of Convention on March 5-6-7. Programme: **Friday 5th**—Meeting at Wireless Institute Centre. **Saturday 6th**—Tour of electronics installation in the morning to be followed in the afternoon and evening by a twilight event, i.e. two fox hunts and barbecue tea. **Sunday 7th**—Main Convention to be held at Cattai Creek, north of Sydney. Events will include a mobile scramble, foot fox hunt, treasure hunt, hidden tx hunt, etc. Registration is free. This should be a most enjoyable Convention, so hope to see you there. 73, 2ZPI.

VICTORIA

Six Metres: This band has been open on the average of four days each week since early Nov. In the main the openings have been to VK4 and VK2 with shorter openings to VK5, 6, 7, 8 and no 9s. ZLs were heard and worked on one or two occasions, but were extremely rare. ZL t.v. being heard quite often without any Amateur signals. Conditions generally were good, though a large number of openings were late in the day when the net frequency 53.032 stations worked quite a large number of DX stations. (4ZPL worked 40 odd on the net, 8 off the net.) Quite a deal of t.v.i. was caused during this period by stations outside of VK3.

Two Metres: This band has been very active with quite a number of new stations appearing. Quite a deal of country activity plus some openings to VK7 and VK5. Stations operating at Mt. Buffalo over the New Year week worked into VK2 and we believe VK3ZER was heard in ZL3.

432 Mc.: Activity has increased on this band —see elsewhere for details of VK3 schedules to other States. The best news of course was 3AEE's success in working 7LZ, 282 miles approx. for what looks like being a new VK record. Congrats. to both stations. 3ZER and 3ZDM are working into VK5 and of course looking for the VK7s. Will the next step be into 5ZDR? 3AGV at Colac has a tx on the band and has worked 3AEE cross-band.

Ross Hull Contest: There were four really keen operators in the Contest this year—3ZER, 3ZNC, 3ZNJ and 3ZPC, who spent the Xmas-New Year week portable on Mt. Buninyong, near Ballarat. Out of the influence of Chan. 0, they quickly ran up a high score on 6 and 2, working into areas beyond the reach of the Melbourne stations. Chan. 0 in Melbourne put a damper on 6 mx activity in the city and the degree of activity was low compared with other years. Of course, when six is open, so too is the t.v. set, as many found to their disadvantage.

Traps for Channel 0: A trap found very efficient for removing your signal from Chan. 0 is made up of 24 inches of 300 ohm ribbon, shorted at one end and having a 3-30 pF. or 3-50 pF. trimmer across the open end. The trap is taped to the antenna feedline to the t.v. set, as near as possible to the input to the set. (Some experiment may be necessary for best results.) The trap is not connected to the feedline but run parallel to it. Tuning is achieved with a non-metallic device and tuned for maximum attenuation of your signal. Its tuning is quite critical and for effective use should be centred on your frequency, preferably away from the t.v. channel.

It should be adjusted during test pattern hours, running tone from your own gear. Of course this assumes you are only radiating a signal between 52-54 Mc. Any spurious signal within the t.v. channel will not be affected. Of course, this we should all know. However, it is surprising how many signals are radiated off the operating frequency.

A further suggestion is that the trimmer be adjacent to the input end of the t.v. as this will facilitate the tuning of the trap without this end flapping around in the breeze. They may require occasional re-tuning, so be on the lookout.

Amongst the many visitors to Melbourne this year was Bob 4NG from Rockhampton. Bob was heard by many mobile around the city of Melbourne. 3ZGP had an eyeball QSO and heard all about the DX from up in north VK4. 73, 3ZCK.

QUEENSLAND

"F.b. signal up here, OM. My number to you 59———. Your number received OK. See you again tomorrow." How many QSOs were made in this manner? Up here in VK4 everyone is still recovering from the high pressure operating of the Ross Hull Contest. Nevertheless, I think that every operator had a very enjoyable time.

During the 64-65 DX season all mainland States were worked as well as VK7. The band was open to ZL on several occasions. The ZL3s were very prominent with ZL1s very rare this year. A VK0 was heard up here and caused much interest. However, I have recently learnt that the VK0 in question does not have any 6 mx gear! What happened to VK9 this year? Very early in Nov. last year a VK9 was heard for about five minutes. There have been no further sounds from up that way at all. Also there was no sign of John 4ZCT in the Solomon Islands. The bands have not been kind this year for northward working.

One surprise DX opening occurred on Feb. 1. The band was open to VKs 2, 3, 5, 7. During the season just past some 2 mx DX was reported. The news of VK2-ZL contacts again this year on 2 mx spread like wildfire up here. John 4ZWB worked a VK7 on 2 and a few VK3s were heard up here, but not worked.

With the imminent arrival of TVQ0 here in Brisbane, there has been a noticeable trend toward 144 Mc. working. A few stations are looking forward to working 2 mx DX next season and with this in mind, a 2 mx beacon is to be established by a group of Hams about 90 miles from Brisbane. It will be on the Bunya Mountains about 3,000 ft. high and will run the legal limit of power. These plans are subject to P.M.G. approval. (Further details elsewhere this issue.—Ed.)

Latest news from TVQ indicates that the latest time a test pattern can go to air is March 31. The earliest day is March 10. How much co-channel interference will there be? Your neighbour is sure to blame you. The Chief Engineer of TVQ tells me that they are putting out reduced power in the Melbourne direction—**only** 25 kw.!!

The final item of news for this month comes from the Ipswich Radio Club. They have decided to adopt the VK3 net frequency as their own net frequency. 73, 4ZPL.

SOUTH AUSTRALIA

Since the completion of the Contest, activity in VK5 has again returned to its annual post-contest state. However, during the Contest, VK5 activity was quite lively and from indications it would appear that the Contest winner will again possibly hail from VK5, but only time will tell.

Various openings have been recorded to VK2, VK4 and VK6 since the Contest, but as is usual, activity in other States appears to be very low around this period. Of interest on 6 mx is the increasing number of transistorised hand-held portables. To date Darrell 5ZKY, George 5ZGV and Trevor 5ZTM have been the leaders into the research of these units and from all accounts results have exceeded expectations.

The main interest on 2 mx has been centred on the contact made between Andrew 6ZCN and Colin 5ZHJ on Jan. 8, 1965. Signal reports of R5 and S5 were exchanged from both ends. A new distance record could eventuate from this contact, and official confirmation is being awaited with interest. Mick 5ZDR has been a little unfortunate in his attempts to work VK7 on 2 mx, as VK3 QRM has interrupted the two occasions that Mick could have "pulled" the contact out of the bag.

Activity on 432 Mc. mainly consists of Mick 5ZDR maintaining skeds into VK3. Regular contacts have been made by Mick with Herb 3NN with signals at times reaching S9. Reports

of Mick's 432 Mc. transmission from Dumbleyong has increased his ego to make it a two-way contact.

Activity on 576 Mc. is skyrocketing to mammoth proportions with approx. 12 stations very active on the band. All equipment is of the unstable variety and efforts are being concentrated on extending the VK6 record of approx. 100 miles. A recent contact of 98 miles between Rick 5ZFQ/P and Trevor 5ZTM/P to John 5ZJH/P at S9 signal strength does more or less indicate that a new 576 Mc. record is imminent. 73, 5ZHJ. (Many thanks for stepping into the breach, Colin. Keep up the good work.—3ZGP.)

WESTERN AUSTRALIA

The new year came in with a heat wave which caused all radio sets operating on 52 Mc. to become overheated and break down just when the other guys were working those ZLs. This was on Dec. 31 when everybody except me worked three ZLs each. It was a hard job working DX and it was necessary to listen continuously and work the station which came up for a few minutes.

On 8th Jan. Andrew 6ZCN worked 5ZHJ, both ways on 2 mx for about three minutes. He heard the VK5 beacon on 144.8 Mc. while tuning the band, called on 6 and contacted 5ZHJ immediately. They arranged for the latter to go on 2 and he was copied R5 and S5. Then both stations went on 2 and exchanged numbers. The last such contact was 13 years ago.

Andrew leads the Ross Hull Contest over here with 280 points. 6ZDS has 200 points and 6LK 169.

David 4ZEK and Dave 4ZAX were over here from 10/1/65, running 100w. mobile, f.b. OM.

Greetings to newcomers Max 6ZFM in Wembley and Bill 6ZBB in Midland. Max has an 815 and Bill a 6/40 with an overtone rock on 52.315 Mc.

Heard W0KBH from Minnesota at the last Morse exam. complaining that the Australian exam. was a bit stiffer than the American. Cecil will be on 20 mx s.s.b. if all goes well, otherwise he will apply for a Z call.

The Xmas fox hunt was an easy one as even I managed to find the tx despite the reciprocating beam Graham 6ZDB had devised. The party at Lance's home in Wembley was good fun and lasted well into the morning. Lance may be going on some real fox hunts soon as he is taking up farming in Moora. Good luck, fella! 73, 6ZAG.

SIX METRE A.M. NET

With the adoption of 53.032 Mc. as the 6 mx a.m. net by the Ipswich Group and the possibility of Brisbane also using the frequency, the population is growing in leaps and bounds. With both local and DX use, operation becomes rather difficult at times and it is suggested that all users adopt some procedure to permit full use of the frequency, both as a cross-town, mobile and DX channel.

Firstly, keep your calls and overs short! A long CQ is not necessary. If you don't succeed the first time, call again but don't keep calling CQ for long periods.

Observe a break of 3-5 seconds before replying to allow another station to call. You can never tell who is listening. VK2, 4, 5, 6, 7 and 8 have heard signals from Melbourne, so keep your ears open. Reports indicate that signals from VK3 were heard in VK8 right through the winter months. If the round table is large, adopt the procedure of having a break for the first minute in each fifteen minutes. Stations wishing to call in should use this period to identify themselves.

It is quite feasible for groups located remote from each other to use the net at the same time without mutual interference. However, stations operating from good locations and using high power should be wary of causing QRM to others.

Each week VK3WI uses the frequency for the Sunday broadcast at 1030 hours. This will provide a steady strong signal over a large area for receiver alignment. Immediately after a call back is taken and the opportunity can be taken to introduce yourself to other net users. The net is available to anyone who cares to call on the frequency. Whether you are crystal or v.f.o. makes no difference. Please do not use the frequency for the purpose of adjusting your antennae with long periods of unmodulated carrier, etc. This only causes inconvenience to all the other users and is not becoming of an Amateur.

Lastly, check your frequency; services are available. There are a number of stations with facilities for giving a frequency check. Many stations are using crystal-locked rx's and if you are more than a few hundred cycles off frequency you are not likely to be heard. Many use tunable rx's however and will hear you.

Soon we will be organising activity days on the net for mobiles, etc. Listen to the broadcasts for this information and endeavour to appear during the times requested. It may be to your advantage. Shortly a register will be commenced to log all stations appearing on the net for a "whose who" for all those interested. See you on the net. 73, 3ZGP.

☆

V.H.F. DISTANCE CONTACTS

Following is the latest copy of the complete list of V.h.f. Contacts held on file. This includes all contacts known to me up till the end of 1964.

—David Rankin, VK3QV,
Federal Activities Manager.

50 Mc. BAND

Call Signs	Date	Distance	
VK3ALZ-XE1FU	1/5/59	8418 Miles	
VK2ADE-VE7AQQ	8/4/59	7320 ,,	
VK3ZAQ-JA8BY (now VK3QV)	28/3/59	5595 ,,	
VK3ZHF-K6HGP/KH6	18/4/60	5499 ,,	
VK6BE-JA8BP	30/10/58	5490 ,,	
VK6ZAL/6-JA8WZ	14/4/60	5482 ,,	
VK6ZAL6-JA8GG	14/4/60	5455 ,,	
VK6ZAL6-JA8CC	14/4/60	5445 ,,	
VK7LZ-JA9IL	3/12/59	5426 ,,	
VK2ABR-JA8BP	25/2/59	5397 ,,	
VK2HE-JA8BP	28/3/59	5386 ,,	
VK5KL-W7ACS/KH6 (Darwin)	26/8/47	5361 ,,	
VK4ZAZ-K6ERG	16/3/58	5305 ,,	
VK4HD-W6NLZ	29/3/59	5294 ,,	*
VK4HD-W6PUZ	13/3/58	5272 ,,	*
VK2RU-JA1ANO	1/4/56	4809 ,,	
VK4HD-JH6UK	15/3/58	4679 ,,	
VK9AU-KH6DBY	30/4/60	4312 ,,	
VK9AU-K6HGP/KH6	26/4/60	4281 ,,	
VK4NG-JA1AHS	22/1/56	4140 ,,	
VK4HD-KR6AK	14/3/59	4059 ,,	*
VK6HK-VR2CG	3/1/55	3935 ,,	
VK6WG-VR2CG	3/1/55	3818 ,,	
VK4NG-KR6AK	8/2/59	3785 ,,	
VK4ZBE-VS6CJ	5/4/59	3616 ,,	
VK9AU-JA7JH	20/4/60	3292 ,,	
VK6BE-9M2DQ	19/4/58	2853 ,,	
VK6BE-9M2DQ	26/9/59	2853 ,,	
VK6ZAL-9M2DQ	26/9/59	2845 ,,	
VK9DB-ZL3GS	26/12/53	2809 ,,	
VK4HD-KX6AF	24/3/58	2665 ,,	*
VK9AU-VK6ZBK/6	14/1/62	2628 ,,	
VK3IM-VR2CB	30/12/53	2398 ,,	
VK9AU-VK7ZAI	1/1/63	2305 ,,	
VK7BQ/7LZ-VK9DB	—	2205 ,,	
VK4NG-VK9NT	1/6/58	1328 ,,	

* A1.

144 Mc. BAND

Call Signs	Date	Distance	
VK2ZKP-ZL1ADE	24/12/63	1351 Miles	
VK2ZKP-ZL1AUM	24/12/63	1351 ,,	
VK2ASZ/2-ZL3AQ	31/12/61	1342 ,,	
VK5GL-VK6BO	30/12/51	1322 ,,	
VK5QR-VK6BO	9/2/52	1319 ,,	
VK2AH-ZL3AR	15/12/51	1307 ,,	
VK7ZAO-VK4ZAX	27/12/61	1107 ,,	
VK4ZAZ-VK5ZK/5	30/12/62	1093 ,,	
VK4HD-VK5ZK/5	27/12/61	1040 ,,	
VK1VP/4-VK5ZK/5	30/12/62	1006 ,,	
VK3ZEA-VK4HD	27/12/61	954 ,,	
VK3ZCG-VK4HD	27/12/61	887 ,,	
VK4HD-VK5BC	27/12/61	835 ,,	
VK3APF-VK4HD	27/12/61	807 ,,	
VK2ZWC-VK5ZK/5 (now VK2ZPB)	27/12/61	709 ,,	
VK5BC-VK7LZ	28/4/59	609 ,,	
VK2ZAL-VK5BC (now VK2RX)	18/1/58	600 ,,	
VK5BC-VK7PF	28/4/59	571 ,,	
VK3ZCW-VK7LZ	—	511 ,,	
VK3ALZ-VK7ZAK/7	10/1/60	379 ,,	
VK3GM/3-VK7LZ/7PF	9/3/52	311 ,,	

432 Mc. BAND

Call Signs	Date	Distance
VK3AEE-VK5AW	13/11/64	226.6 Miles
VK3OB/3-VK3ZER/3	12/9/64	119.7 ,,
VK3OB/3-VK3ZAV/3	19/1/64	97.3 ,,

576 Mc. BAND

Call Signs	Date	Distance
VK6LK/6-VK6ZDS/6	15/12/63	101.2 Miles
VK3ANW-VK3AKE	11/12/49	80.1 ,,

1215 Mc. BAND

Call Signs	Date	Distance
VK2ZAC-VK2ZCF/2	4/3/62	46.8 Miles
VK5LA/5-VK5ZCR/5	4/1/62	1.0 ,,

2300 Mc. BAND

Call Signs	Date	Distance
VK3XA-VK3ANW	18/2/50	9.0 Miles

3300 Mc. BAND

Call Signs	Date	Distance
VK3ZGT/3ZGK/3-VK3ZDQ/3	14/12/63	63.5 Miles

YOUTH RADIO CLUBS

First mention for this month should go to VK3. Neil 3AVK quite rightly mentions that this column does not give as much detail for VK3 activity as for VK2. There is a reason, of course—I get more letters and details from VK2 and VK4, even counting the excellent Newsletter sent by Ken Matchett. (In 1964, I was considered unimportant in other Divisions—and who am I to argue? I have better hopes for 1965.) Anyway, Neil sends details of four young A.O.C.P's that he knows. Rodney 3AIE is active on 80-40-20-2 mx with 30w. on homebrew, will be doing Matric. this year at Scotch College, passed A.O.L.C.P. before 16. Peter 3AZL obtained A.O.C.P. at 15, has been active on 80 with 15w., has nearly finished a 5.5 Mc. filter s.s.b., does Leaving this year. Bruce 3ZCR is active on 2 mx and is pushing away at c.w., aged 16. Neil 3AVK is on 80-40 with 25w., has a high power linear nearly ready for s.s.b., is 16 and does Matric. this year at Carey Grammar. Let's hope there are more like them this year.

Here are some excellent results in the N.S.W. Leaving Certificate from four well known young Amateurs. Susan Brown 2BSB (Booragul) obtained two Honours, an A and two B's. Joseph Mace 2ZMH (King's School) obtained two Honours, two A's and two B's. Roger Davis 1RD (Lyneham) obtained three A's and two B's. Jim Watson 1JR (Lyneham) obtained one Honour, four A's and a B. All four were given Commonwealth Scholarships.

One more feature item this month (all Divisions please note) is that Mr. M. Henderson, Head of the Physics Department at Sydney Teachers' College, has made a special point of advising his students about the advantages and possibilities of the Y.R.S. It is probable that a transmitting club will be established at the Teachers' College this year. Teacher trainees other than science students should find Amateur Radio a wonderful thing when sent out to lonely one-teacher schools. There is no doubt that the Teachers' College in each State should be a prime target for the Division resources.

Some other news from VK3—Bill Allen, leader of Gowrie Park State School Y.R.C. spent 10 weeks in Heidelberg Repat. Hospital, but is now out and enjoying a holiday before going back to work. Phil Lavery, Instructor at Christian Bros. (Bundoora) has gained A.O.L.C.P. and the club should be on the air (3ZFR) on 2 mx by now, with the assistance of Dave 3ZMX.

Loads of news in VK2: Continued interest in Keith 2AKX's Electronics by Radio on 160 mx. Nick Dzydik (Kingsgrove North) is a technician trainee at Western Electrics at Sydenham. Transfers noted are Mr. J. Standard (2BS) from Kingsgrove North to Epping, and Roger Graham from Inverell to Kiama (help urgently needed at Inverell High!). Jan Oosterveen, 2BJO (Westlakes), has finished P.M.G. trainee technicians school and will be attached to Singleton Exchange. Maitland Y.M.C.A. considering radio amongst projected activities and help wanted from Amateurs. Inter-School Christian Fellowship organising an Electronics Holiday at a camp for schoolboys with loads of parts and plenty of projects—an interesting idea and would like to hear more of it. Flight Sgt. Terry Crews (R.A.A.F.), formerly of Gosford High, has had two promotions during 1964 in the Radio Apprentice Course at Laverton and has been selected for a four-year Signals Officers' Course—a great effort!

John Thyrd (Kingsgrove North) is now a trainee in Dept. of Civil Aviation in a five-year course on latest equipment. More negotiations for liaison with Boys' Brigade and Australia Air League. Colour slides of Y.R.S. activities wanted by Rex 2YA. Lastly, a little from VK1: David Davies, 1DD, now on the air with a transmitter from Lyneham but soon will have his own rig finished. David, George 1GB and Jim 1JR did an all-night stint for the Field Day with assistance from Bill Tweedie (Lyneham). The younger muscles did a lot of the hard work for 1ACA. 73, 1KM.

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ERRATA

Readers are asked to note the following corrections to the article "Modifying F.M. Carphones," Dec. 1964 "A.R.," p.3. Fig. 1, lower drawing: The 6AU6 plate tuned circuit caption should be transposed with 40 Mc. double grid connection. Fig. 2: The three crystal sockets on the left should be marked "Rec." and the three on the right should be marked "Tx".

NEW CALL SIGNS

NOVEMBER, 1964

VK2BS—J. W. Stannard, 66 Shadforth St., Mosman.
VK3QJ—V. N. Tuohill, Tanjil Gr., Lakes Entrance.
VK3ACW—E. R. Hake, 543 High St., East Prahran.
VK3APN—P. R. Nesbit, 32 The Grange, East Malvern.
VK3ASK—C. Sterling, 3 Bloomfield Ave., Maribyrnong.
VK3ZDV—D. W. Wright, 282 Springfield Rd., Nunawading.
VK3ZEF—W. H. Kelly, 58 Finn St., Bendigo.
VK3ZEV—A. P. Telford, 292 Riversdale Rd., Camberwell.
VK3ZEY—J. C. Meyland, 5 Gayer Ave., Wangaratta.
VK3ZFD—N. G. Chalmers, 7 Balmoral St., Essendon.
VK3ZKX—T. D. Lamb, 7 Rosebank Ave., Strathmore.
VK3ZND—N. W. Deague, 26 Somers Ave., Malvern.
VK3ZPN—N. J. Watson, 85 McNamara Ave., Niddrie.
VK3ZPW—P. J. Wright, 16 Louise St., East Brighton.
VK3ZTL—T. L. Lindsay, Station: Lot 107 Dunloe Ave., Norlane; Postal: Radio Station, 1 B.F.T.S., Point Cook.
VK4ET—E. T. Pendleton, 38 Chartwell St., Aspley.
VK4ZZG—G. D. Nixon, St. Patrick's Ave., Kuraby.
VK5HH—M. K. Rogers, 30 Portland Ave., Darlington.
VK5ZDE—D. B. Murdock, 32a King St., Mile End.
VK6FL—F. C. Lambert, 83 Second Ave., Bassendean.

FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

(SEND CORRESPONDENCE DIRECT TO DIVISIONAL REPORTER NAMED AT PARA. END)

FEDERAL QSL BUREAU

Congrats. to John VK5KO on his further DX on 160. Latest additions are JA6AK and 9M4LP.

Cards from ex VK0JC have recently come through for his Antarctic work during 1960!

Ken VK3TL, recently on a DX-pedition to Norfolk Island signing VK9TL, piled up QSOs in business-like manner, both on c.w. and s.s.b. The Galaxy outfit worked fine. QSLs to Ken either at home QTH or via this Bureau.

Bob VK9RB completed his tour of duty at Norfolk Island during January and returns home to G land. All QSLs should now go via R.S.G.B.

George CR6GO, QSL Manager for Angola, expresses his desire to help any station who has outstanding QSLs from CR6. Contact him at Box 404, Luanda, Angola.

V.E.R.O.N.A. (Netherlands Antilles Section of I.A.R.U.) advise of their new Curacao Certificate. Full details from this Bureau.

Ray Jones, VK3RJ, Manager.

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NEW SOUTH WALES

HUNTER BRANCH

"There was nothing ugly about that duckling!" This was the remark made by one of the thirty members, associates and visitors who attended the February meeting of the Branch held at the Technical College on Friday 5th. The reason for the remark was the description and demonstration of a beautifully built sideband transceiver, made by Alex 2JZ. Old gentlemen on the 80 mx band are sometimes heard to refer to certain commercial equipment as ugly ducklings and thus the title, which has come into general use. Alex is to be complimented on the standard of workmanship in the unit, which he says is nearly as efficient as a "bought one". He described with the aid of block diagrams and circuit sections how the transceiver worked and how, by using some cunning ideas, one valve could be made to provide several functions by biasing. Several of the members who are conversant with the mysteries of the farmyard mode plied Alex with questions and, following the lecture, one of the old gentlemen aforementioned, Lionel 2CS, moved a vote of thanks which was carried by hearty acclamation. I was unable to get a close look at the gear because of the large gathering of bods already round the demonstration table. However, what I saw convinced me that this was an excellent project, construction and operation wise.

Although the attendance book was passed around the room, some of those present failed to sign it. If it is impossible for you to write your name then make a mark of some kind to record your presence.

There are several theories as to why we did not have the company of the President, Frank 2APO. One very uncomplimentary type said that he had forgotten the meeting, but I favour the second reason—he was mending the holes in his net. Some of them are really quite large, being about 8 kc. wide, but repairs have resulted in the size being reduced to 3 or 4 kc. Our fireman friend was there too, although he must have left his helmet outside since he was not wearing it during the lecture. You don't know of whom I speak? Rodney 2CN is the lucky holder of the title since the big burn-up at NBN3.

Stan 2AYL threatened to keep all the QSL cards he had for me if I made any more errors in his call sign in these notes. Having lowered myself to my well worn knees and promised, Stan brought my huge bundle of cards from behind his back—three all told and two of those were for my piratical companion—may his fowls all die! Still, it does prove that I am on the air at times and that I am considered illustrious enough to have my call sign pirated. Chris 2PZ was most interested in the ducktalker and perhaps this indicates an early change from a.m. Being no prophet, I am unable to promise that this will occur but I can promise that by the time you read this, Chris will have had some publicity—complete with pictures for 2AXC, the Cessnock Radio Club. Those who read the Newcastle Herald will join me in congratulating Jennifer Cox, the President's daughter, for the really excellent job she is doing in publicising Amateur Radio in this area. I am informed that the Saturday column is more extensive than that in any other Australian newspaper and that circulation throughout the valley and along the coast ensures that the news of Amateurs goes into more homes than elsewhere in the country. And think of the handsome, intelligent, eligible young men who have featured in the photographs! (Just address your letters to my call book address please fans.)

Returning briefly to earth, I have to report that our old friend Bob 2AQR, who is known to some of his more coarse associates as Sir Cumference, has defected to the Central Coast and, worse still, up to the time of writing, he hasn't even turned the receiver on! Things must be pretty busy among the apothecaries of East Gosford. Bob had hoped to record his 5,000th contact with Bill 2ZL before he left, but they just could not make it. Bill is not giving up hope though and he is looking forward to regular lunch-time QSOs as soon as things are back to normal. He tells me that his new diet is most successful and that I should try it. Of course the truth is that having Mrs. 2ZL in hospital has resulted in him cutting down to four meals a day. It is to be hoped that by this normal meal times will again prevail at Phenyle Bay.

Some of the Westlakes boys put on a field station for the John Moyle Memorial Field Day, but what success they had is not reported. They are grateful to all who helped, especially Bill 2XT who loaned some very compact 2 mx gear. The same Bill has been leading a leisurely existence of late at his country seat by the beautiful lake and it was during this time that he heard of the proposed field activity. If you have any old lawnmowers about, please contact Stuart 2AYF who has some diabolical plan afoot to use them for generating the currents necessary for field operation.

With the State elections soon to be upon us, maybe you would like to get some heckling practice. If so, please be in attendance at the usual place, Room 6, Clegg Building, Newcastle Technical College, on Friday, 5th March, at 8 p.m. Reason, it is the Annual General Meeting of the Branch and the time for new officers. Please try to be there. For one thing democracy must be satisfied, and for another all the other blokes will be there, so why not you? See you, 73, 2AKX.

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QUEENSLAND

DIVISIONAL COUNCIL NEWS

The monthly Council meeting was held at the Institute of Social Services, Berwick St., Valley, Brisbane, on 28/1/65 at 8 p.m. Peter 4PJ (President of the Division) was in the chair. The Council meeting was well attended and a few visiting members were also present. Correspondence was read and adopted and then it was brought to the notice of the meeting that Stan 4SA, who has been A.O.C.P. Class Manager, has decided to relinquish this position since he was about to undertake extensive motoring tours with his XYL.

Seven new applications for membership were approved by Council and names will be submitted to the next general meeting for ratification.

Federal Councillor Laurie 4ZGL reported that a motion was to hand from VK2 to the effect that "As the minutes from the 1964 Convention have not yet come to hand, the VK2 Division puts forward a motion that the 1965 Federal Convention not be held." The VK4 Council voted against this motion as it contends that the 1965 Convention should be proceeded with.

SILENT KEY

It is with deep regret that we record the passing of:—

VK3ZD—Ron Williams.
VK5DA—S. R. Buckerfield.
Ex-VK6JJ—J. T. Jewell.

The Treasurer's report was read and adopted. The Treasurer 4DG tendered his resignation from the position and his place has been taken by Don 4DZ. The President, while accepting Keith's resignation, stated that he had done a very good job and due to his efforts, the financial position of the Institute had never been stronger.

Don 4DZ has also been appointed organiser for the Sunshine State Contest. He has formulated proposals for improving the Contest. These proposals will be published in "QTC". It is suggested that comments will be invited from all members before these proposals are adopted.

The W.I.C.E.N. movement has been very slow. Some entries have been received from the country, but Brisbane members seem to be very reluctant to offer their services.

It was moved by Al 4LT that Council accepts the recommendation of the sub-committee that we purchase a Galaxy 5 s.s.b. transceiver for 4WI. The motion was carried. (Not to be read by 5PS!)

The question of the setting of papers for the Youth Radio Scheme and also the marking of same is causing some concern. Quite some discussion took place on this matter. Most of this stemmed from the points raised by Frank 4FN at the January general meeting—quite a meeting, wasn't it, Frank?

Jack 4JF, the VK4 QSL Officer, reports that VK2 VK3 and JA QSL Bureaux are returning quite a few cards since the owners are not W.I.A. members or do not bother to collect their cards.

Finally congratulations to the Ipswich Radio Club. The official station of the Club, VK4IO, was opened recently by the Patron of the Club, the local M.H.R. The Club Station opened with a contact with VK4WI during the Sunday morning news broadcast. 73, Bill 4ZBD.

TOWNSVILLE AND DISTRICT

Since writing the last notes I have not received much in the way of news, so I must not resort to padding, which is the sole prerogative of that much maligned scribe and foe of our worthy Editor.

Basil 4ZW called in on his way back from the capital city, proud possessor of a new car of which he tried vainly to make me jealous (and how). Swears that Zoe was a poor navigator, yet she found my new QTH at 15 Chubb St., Belgium Gardens, Townsville.

Charlie 4BQ also had a pleasant trip over the north and as far south as Bundaberg. No doubt to taste it's famous rum?

Met 4WH the other day in the city after a long time and Eddie has seemed to forsaken Radio in favour of the corner pieces, which he is busy sorting and evaluating. Hope it reaches high enough that he can retire.

As I have moved to this new QTH and have no skywire at present, am unable to glean any news by eavesdropping. So, all my friends have patience a little longer and make good use of the quietness, ere I can bash your ears again.

Vern 4LK and his wife were welcome visitors after quite a long time. He has other hobbies that bites into the time.

Bert 4LB is pleased that the new quad is back again in position and higher than before. He was quite a help in dismantling my tower, together with Merv 4ZMD. Hope it is not long before I have it up, then will compete with 4PS (not 5PS) on the other side of the hill from me, while we both look down on Ken 4KT on the lower reaches—he being in a more favourable position for DXing.

Perhaps my memory is failing, but I have a recollection that 5PS has handed me the Cuppa way back in 1958, when Gordon 5XU took me along to the Council meeting at 5PS' QTH. I well remember Doc (late 5MD) bringing me back into the city, after he had received strict instructions that I be accommodated with the free lodgings at taxpayers' expense.

Frank 4PF was met the other day and says that he has not been active for quite a while. His co-partner, Bob 4MF, is quite active with his latest transceiver. Ye Ed., how about a cuppa? 73, Bob 4RW.

OBITUARY

RONALD ARMAND WILLIAMS, VK3ZD

It is with sincere regret that the W.I.A. announces the sudden passing of Ron Williams, VK3ZD, who died at the Maroopna Base Hospital (near Shepparton) on 8th February, 1965, aged 48 years.

Born 11th December, 1916, educated at Trinity Grammar (Melbourne) and an early member of the Wireless Institute of Australia, Ron was a true Ham with the ardent curiosity to know not only "how something worked" but "why it worked", and this tenacity of purpose stayed with him right throughout his commercial career.

Joining the Australian Military Forces during the war he was commissioned as a Lieutenant in Southern Command Signals where he applied his knowledge and experience as an Amateur to the service of his country. During this period he also obtained his Broadcast Engineer's Certificate of Proficiency and was an associate of the Institute of Radio Engineers.

At the conclusion of hostilities an opportunity came for him to move into the field of broadcasting and he (now with his wife and family) moved to Warragul where he worked for 12½ years as Manager and Chief Engineer of 3UL, one of the country stations of the Associated Broadcasting Services network.

Despite the zest and energy he gave to his work in this field, as he did to all he undertook, he found time for sport, becoming a highly ranked tennis player and Eastern Country Champion; President of the Warragul Branch of the Australian Rotary Club and later a member of Rotary in Shepparton, as well as playing his part on many local committees and associations operating in the public interest. His great drive in everything he undertook made for him many friends in all walks of life.

With television appearing on the horizon Ron found time to study television technique and programming for which he attended the Royal Melbourne Institute of Technology, travelling from Warragul to Melbourne several times a week to attend night classes. When the opportunity presented itself he applied for, and obtained, the General Managership of GMV6 Television in Shepparton and from the commencement of the foundations he supervised the entire installation until its inaugural opening and for the three years of its existence until his untimely passing.

It is worthy of note that engineers, technicians, electricians, programme staff and all other sections of the broadcasting and television staff, together with many business and personal friends, travelled to Shepparton from Interstate and within Victoria to pay their last respects to a relatively young man who dedicated his life and energy to his profession. Amateur Radio has lost a real Ham from its ranks and Amateurs everywhere extend to his relations and friends their sincere and deep sympathy. VK3ZD has passed beyond the veil leaving behind him a fine example to those who must carry on his work.

SIDNEY ROY BUCKERFIELD, VK5DA

The VK5 Division announces with sincere regret the passing of Sidney Roy ("Buck") Buckerfield, VK5DA, on 11th January, 1965.

Licensed in 1924, he was an active Amateur up to the time of his death, and during his long association with radio he was connected with the building and installation of 5KA's first transmitter, and as a technician with the P.M.G's Department he assisted with the installation of the 5AN transmitter in the old Central Exchange Building, and also with the installation of 5DR at Darwin. He was, for a time, Officer-in-Charge at Crystal Brook with 5CK, and later assisted with the early experiments associated with the f.m. station at Mount Bonython, from whence he retired under medical advice in 1962.

One of the few remaining real "old-timers," his sudden passing leaves a gap in the history of Amateur Radio in VK5 which cannot be filled, and to his sorrowing wife, Selma, his son, Graham, and his two daughters, Anita and Joan, the VK5 Division extends its deepest sympathy and can only hope that time will ease the burden of his departure.

J. T. (JACK) JEWELL, ex-VK6JJ

Jack Jewell, the Superintendent of Radio in Western Australia died suddenly on 15th January, 1965.

Until the war, Jack was active as VK-6JJ in the Amateur sphere and was a foundation member of the Subiaco Radio Society. Up to the time of his death he was Radio Superintendent for 2½ years. For several years he was Chairman of the Amateur Advisory Committee. Being an Amateur, he was sympathetic to their requests and at the same time looked after the interests of the Department.

Jack leaves a widow, a married daughter and a son, and our sincere sympathy goes out to them.

SOUTH AUSTRALIA

The monthly general meeting of the VK5 Division for January was held in the club rooms to what my informant tells me was a well attended gathering of members and visitors. The meeting opened in a somewhat spectacular manner with a lot of running hither and thither, mostly thither, by the President (Phil 5NN), with the lecturer for the night, and/or his assistants at times trying to get into the act. The reason for the hither and thither business was finally established as being caused by the absence of the caretaker and the inability to locate certain pieces of equipment necessary for the lecture, but as our President usually gets his man in the end, I don't know which end, the meeting eventually settled down to normal.

The lecturer for the night was Dr. Briggs, from the University of Adelaide, who discussed at length all aspects of the Ionosphere and its effects on radio transmissions. Among the many points raised by Dr. Briggs was one to the effect that St. Kilda is a reasonably quiet location, and another one that the University is considering a proposal to erect about 100 dipoles at Buckland Park, spread over about one square mile of territory, to which will be connected 100 transistor receivers by means of some 50 miles of co-ax. cable. The lot to do with experiments to measure wind velocity in higher altitudes and star signals.

If you should bump into me walking down one of our main streets with a transistor rx glued to my delicate ear, listening to the Yar-Yar music, then you can safely deduce that I have been dallying in the vicinity of Buckland Park!!

The lecturer answered questions as he went along and the members who did the asking certainly seemed to be well on the ball so far as the subject matter was concerned, whilst the non-question asking members never seemed to get their minds off the fact of so many transistor receivers lying around not earning their keep The vote of thanks to the lecturer was ably proposed by Rob 5RG and the applause which followed definitely indicated how successful the lecture had been.

Very little business of importance was transacted, there was some discussion on frequencies for W.I.C.E.N. in the 53 Mc. region, but it was thought that the general meeting was hardly the place to deal with this; the President drew attention to an article recently printed in "CQ" re the I.T.U. Convention at Geneva, which he considered highly informative and he will seek its reprint in the magazine for general reading; and last, but by no means least, some items available, and some hoped-to-be-available, to members were on display.

Several visitors were welcomed by the President, among whom was G3KSL who is residing, at present anyway, at Windsor Gardens —QRM for Dave 5DS?—or is it vive-voce, who was brought along by Jack 5JS; also Messrs. L. Collins, A. Trott, J. Harvey, D. George, P. Leonard and H. Graham. A little more hither and thither business brought the meeting to a close, and members left for their couches of virtue, most of them anyway, well satisfied with the night's entertainment. My thanks go to my new cub reporter, Tom 5TL, who helped me out by covering the meeting. What's that? He is no cub, oh get away with you, we are only as old as we feel. Look at me, goo, goo, goo, gurgle, gurgle, gurgle, and other expressions of baby talk!!!!

Had quite a job digging up some information on Buck 5DA for his obituary. As is usual with the average Amateur, Buck had quite a lot of "Firsts" and credits to his name in his hobby, but no official records had ever been written down, and whilst most people remembered something or other about his career in radio, nobody could pinpoint anything in particular. During the digging process for information, I was amazed to note just how many of the "Big Brass" in the P.M.G. were on christian names basis with myself. This was due, of course, to the fact that I had worked alongside most of them back in the old days when they were just simple peasants like myself. The part that did amaze me was that although they were in big positions, they still retained their sense of humour and their equilibrium. I range Engineers, Radio Superintendents, retired State Engineers, etc., etc., and only struck one who was inclined to be a little upstage. I used to work with him down on telephone construction, more years ago than I care to remember, and he soon came down offstage when I addressed him as "Boofhead" and drew his attention to a couple of incidents that occurred out on the job, with he and I as the guilty culprits. We finished up as matey as matey could be—I think!!

I received a lot of letters and cards over the Festive Season, for which goes my sincere thanks. It was good to know that I had more than just the one reader I had hopefully

thought I had. However, I was a little perturbed to note that quite a number of the writers went out of their way to mention that they were pleased that I had taken such a stand on such and such a subject, or had stood up for this and that. I hasten to write that I never have, and I hope never will, take a stand on anything in these Divisional notes. Anything that I have written about has only been because I felt that it was of interest to the reader, or perhaps might stimulate discussion which would react for the benefit of the notes in the magazine, thus keeping the VK5 Division to the front, and after all, that is the prime purpose of the notes. So-o-o-o-o, the next time you think I am taking a stand on anything, forget it. I only thought you might be interested. That's one of the reasons I have managed to last as long as I have!

One of my spies in VK2 reports that a certain gentleman by the name of Reg 5RR passed through the said spy's locality recently at a speed that suggested that he was in training for the Monte Carlo Rally. On checking up, I find that there is a suggestion that Reg travelled non-stop from VK5 to Albury, which certainly lends support to the report. Before long he will be known as Ho-Halong Harris. All right, all right, I thought it was original.

I have it on the highest authority in the land that Frank 5MZ was Father Xmas at the Perry Engineering Works' Xmas Party. There were 480 nippers at the party and when they had finished with dear old Father Xmas, he felt more like the Easter Bunny. Frank must have given a wonderful performance in the part because his two grand-daughters Susan and Joanne did not recognise him, and if all is to be believed, he is likely to get nomination for this year's Academy Awards. He is known as Sir Cedric Bentley to his intimates, or is it Richard Burton Bentley!!??

Talking of Frank, naturally also brings in Carl 5SS, who has apparently grown tired of the dickey birds and has now taken up the art of breeding prize gold fish. My source of information also tells me that he is an ardent gardener, and is selling his spuds and tomatoes cheaper than that well known figure in VK5 —Tom the Cheap Grocer. Be careful, Carl, with the weather as it is at the moment in VK5, you might get the colleywobbles in the spuds and the wolleycobbles in the tomatoes.

Received a letter from Les 8UX saying that he was sorry that he and Beryl would not be able to make the Xmas Social this year (last year to you), nor the v.h.f. picnic. He sends his 73 to all the gang down here, and is bemoaning the fact that a recent high wind and dust-storm brought down his dipoles and he has been too busy to put them up again. He cheered me up by telling me that he managed to get down to just below 20 stone in weight for a week, but it was not worth the effort! You and me, too, Brother.

Harry 6WZ dropped me a line, also a Xmas card, with the QTH of P.O. Box 149. The explanation for the P.O. Box was the fact that he could not manage the rent for the great big house, so had moved to a post office box! Good to hear from you OM, was beginning to think that you had floated off somewhere. Also noted no Ham activity since September 1957—that's no good Harry, pull your socks up.

My old sparring partner, Ken 1KM, also wrote suggesting that I visit his locality for the Easter Convention and also suggesting that we could then drink a toast to all the brave "A.R." correspondents who bravely venture into battle each month, not with each other, but with the plebian hordes. Tut-tut, Ken, cut out the bad language. No good me trying to get to the A.C.T., my espionage agency would make me a bad security risk, and wouldn't you like to get me behind the wire?

A certain 5BI, located at Cowell, was another of the boys to tread the boards during Xmas in the guise of the red suited, white bearded dispenser of toys and goodies. His stature, unlike Frank 5MZ, did not appear to have come up to scratch, with the result that a couple of pillows were added to the girth, plus an extra issue of white whiskers. In his own words, he looked like a "wool blinded sheep," but apparently his performance came up to the expected standards, because none of the little Sebastians, I think that was the name, woke up as to just who he was. Nice work OM, you might even get to Hollywood.

Had a short QSO with Rex 5DO and Doug 5DW on Xmas morning, and we all exchanged the seasonal pleasantries. In the background of Doug's transmission was the twittering of birds and the occasional buzzing of bees—I think—and he explained that his shack was close to an aviary. My suggestion that he be sure and keep his hat on so that we should know which were the galahs, met with the usual coarse reply, but his sense of humour finally won out. Stout fellow is Doug, he used to be a VK3, but we have cured him of all that. It has taken time, but it was worth it!!

Received a letter, signed "A 5PS Fan," all the way from Meningie, enclosing a cutting from a copy of "Amateur Radio" of 1949, on the "Letters to the Editor" page, in which was ringed with blue pencil a letter full of praise for the then VK5 scribe—my natural modesty forbids me to say who that scribe was—and signed R. H. Atkinson, 6WZ. All I can say is I don't know how I missed it Harry, I certainly never remember seeing it, but this I will say, since reading it none of my hats will fit, not even my space capsule hat. Oh well, if you will stop twisting my arm, I will give you a clue as to who the VK5 scribe was. He was known even then as Petunia, or was it Aspidastra, no it was Convolvulus, or it could have even been Tiger Lily. Growl, growl.

Darcy 5RJ noticed at the meeting, and also noted that his membership fees will have to be increased because he now resides at Mitchell Park. The call of 5RJ has so long been associated with Kadina that it will seem strange to think of him anywhere else. Welcome back to the city, Darcy.

Rob 5RG commenced the new year in the right manner with a new tower, assisted by several willing workers, one of whom apparently enjoyed himself so much that he left his dark glasses behind. The tower must have come up to expectations because Rob has been heard reporting good European DX on 21 Mc.

Pat 6PH was temporarily located over the Xmas period at the Kingston Park caravan park and bobbed up on the 5WI session one morning. He was very appreciative of the fact that George 5CV contacted him about 150 miles inside the S.A. border and practically talked him into Elizabeth, where he was made very welcome at George's QTH, for which he was grateful. Good public relations on the part of George, I thought.

Did you hear the W.I.A. broadcast on the morning of Jan. 3 Some of the noises off sounded like burglars breaking in, although no mention was made as to whether the programme was one of construction or destruction! By the way, a well conducted session I thought, keep up the good work—I have to say things like that, because after reading this paragraph, the operator might have thoughts of punching someone on the nose, or action along those lines!

Ses 5GP reported on holidays and gone eastward. Nobody knows how far east, but if he has ventured over the border, I can only say, "I told you so." Those VK3s are cannibals where VK5s are concerned!

Uncle Tom 5TL now living at Glandore in a pretty slash-up cabin, if I might be permitted to say so, invited me down to collect some figs, peaches, and apricots. I could not get down there quick enough with my trailer —ahem—and was rewarded with a load of fruit which would have made Carl 5SS turn green with envy. Tom tried to entice me to climb the ladder and pick some peaches, but after I had climbed the 49th step and still was not able to reach the peaches, I lost confidence and climbed down, especially when I noticed that Tom was madly cutting through the leg of the ladder with a sharp saw. What some people won't do for revenge, why I might have fallen and broken my intentions!

Received a letter from Brenda 3KT and John 3AFU in which, apart from "having a lend of me," they told me of their harrowing experiences in trying to pay their Amateur licence other than direct to the Receiver of Public Moneys. My sympathy was definitely pointed in their way until I read at the bottom of the letter that they "looked forward with anticipation to working me on sideband in the distant future." The final thrust came with a P.S. to the effect: "Where on earth is Rose Park?" I tell you, you can't trust these VK3s—male or female!

Did you notice in the January issue of "A.R.," at the bottom of the reprint from the R.S.G.B. Bulletin, how Ye Ed. spurned the olive branch that I had held out to him in recent VK5 notes? Naturally I see further behind the scenes than he gives me credit for. He is not a bad sort of bloke himself, but with Rasputin (3AFJ) at his elbow concocting his schemes of revenge, what chance is there for me. You had better be careful—there is always the VK5 Journal! In fact, the editor of that excellent little publication has been offering me unheard of figures to ditch the magazine—no noughts either—why the last offer reached 1/7½, what's that? A week, break it down, I am not that good—no a year!

The sudden passing of "Buck" 5DA came as a shock to all VK5 members, and the number of Amateurs who attended the funeral indicated just how well known he was in Amateur and P.M.G. circles. He and I were mates back in the middle twenties, when we both worked in the telephone section for the P.M.G., and I, as an ardent short wave listener was trying to get my Amateur ticket. No questions or probing for information on Amateur Radio ever bothered him, and his readiness to assist the up-and-coming Amateur, both theoretically and practically, were well known even in those early days. One of his outstanding contributions to Amateur Radio was when the P.M.G. sent him, complete with his home station to Kangaroo Island to maintain communications between the island and the mainland during a break in the submarine cable. Popular, well esteemed for his undoubted standing in the realm of radio, by amateur and professional, his cheery voice and personality will be missed by all, and his sudden passing leaves a gap in the history of Amateur Radio in VK5 that cannot be filled. So Mote it be.

Well, I make it a practice never to close these notes on a note of sadness, so I report that I met Jack 5JS at Buck's funeral and he said that he supposed he and I would be having our annual QSO from Oakbank soon, where he coarsely insinuated I sold peanuts on the racecourse each Easter. I was cut to the quick at this suggestion, and told him in no uncertain manner that people who made such statements could be sued for libel. After all, everybody knows that I sell pies and pasties! Peanuts indeed, I told him just what he could do with the peanuts—a suggestion that seemed to give him cause for intense merriment. 73 de 5PS—PeanutS—er—er—I mean PanSy to you.

[The following is published by "A.R." and was not included in the 5PS notes.—Editor: "To the members of the Magazine Committee, Dear Sirs—Spelt Curs!!—You will notice that there is no reference in these notes to the Higginbotham Award and the front page of February's 'Amateur Radio.' There are two reasons for this, (1) the notes were finished and ready for posting before the arrival of the 'mag,' (2) for once in my life I am completely speechless at the duplicity of all concerned. I knew about the award, George 3AOM had notified me, but the photo was right out of the blue and I am now in the process of finding out how you achieved it. I can only say that I do not consider myself worthy of the award—but—try and take it away from me! I thank you all sincerely for your lack of judgment and will endeavour to try and live up to it in the future.—Warwick."]

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WESTERN AUSTRALIA

News is rather short again this month but we will endeavour to write something which will interest all.

It is with regret that we have to report the passing of Jack Jewell, the Superintendent of the Radio Branch. Jack was always willing to help anyone who asked for assistance.

Vic 6VK has just returned from a trip to England and Scotland where he had a preview of the type of equipment which will be installed at Channel 9. This brings to mind the representation of Amateurs working in this establishment. There are Vic 6VK, Cedric 6CD, and Tom 6DP that I can call to mind at present and possibly more.

One spy has reported to me that one of our new full call signs is busy building up s.s.b. gear and has already got a Vacar v.f.o. working very well. We wish you all the best on the low bands Harry 6HP and don't get carried away with all of the DX which comes along.

Pat 6PH has been holidaying in the Eastern States and should have settled down to work once again now. It's about time that you had that s.s.b. gear finished too Pat or did you call and see the commercial built gear and yield to temptation?

At our last Council meeting I was once again elected Federal Councillor and I trust that I will be able to carry out this job fully and give something of value to our hobby.

Bill 6DX is very busy up in Kalgoorlie and would like some assistance in running Amateur Radio Station at the Kalgoorlie Fair. Not only would he like manpower but would also like gear and test equipment to put on display. Bill hopes to have a station operating the whole time that the Fair is on. If you cannot help any other way at least call the station if you should hear it.

Another field that has attracted Bill is the Youth Radio Scheme and if he only achieves half of what he visualises it will be very big.

We hear signals coming from Bob 6RG which are very nice and easy to resolve. Bob has spent much time building and wrecking this gear of his, but the result is very pleasing to hear.

The Division could be losing the sevices of Alyn 6ZDM, our Secretary, as he has been posted away to another State, but has managed to get a three-month stay of proceedings. Should he have to go, then we will require a volunteer to take over the Secretary's job. If you are at all interested then how about letting your Council know.

6WI's transmitter has now been shifted from Kalamunda and is now being housed in Nedlands.

Here I think that we should one and all thank the many people who make our news broadcasts a success. Not only do we have the one person involved, but several other relay teams in operation. These relay teams help out in the running of the news broadcasts and make things so much easier for Mac 6MM.

Well this seems to be all for this month, so see if you can give me more information for our next notes. Remember, you can let me have them right up to the second of the month. You had better start thinking about another scribe also as I have given a date after which I will not submit any notes for publication. 73, Roy 6RY.

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TASMANIA

Here we are into the third month of the year already, which means sub. month and Annual Meeting, and Dinner month as well, so make it a good roll up this year; the date is 27th March. Venue for the meeting will be the club rooms at 147 Liverpool Street, Hobart, while the Dinner will be held at the C.W.A. Rooms in Criterion Street. The cost will be £1 per head, so make up a car load and let's have a real get-together.

Last November (that's a long time ago so it seems) we had a visit from George 3ZLG and his XYL Joan, who toured the State in their station sedan and visited quite a large majority of shacks in VK7.

Ian 7ZZ reciprocated in early January by spending a very pleasant day at George's place at Wacol, VK4, while he was in that fair State with his cricket team.

Our February lecture, following the general meeting, was given by Mr. Rod Sutherland, the title of which was "The Application of Electronics in Heart Research." This was without a doubt an exceptional lecture, by a gentleman who has considerably more than a layman's knowledge on the subject. I understand he is to give us a further talk on the subject and I would advise all those who can make it to come along "'cos it's sure a fascinatin' subject".

The Institute once again provided radio communication between starter and judges for the rowing events at this year's Royal Hobart Regatta—the largest aquatic carnival in the southern hemisphere, and our thanks to the volunteers who operated the equipment on the two days.

After a lapse of some considerable time, W.I.C.E.N. has got going again in VK7 and an exercise held in mid January saw 16 stations on the air. We learnt where our faults were (and still are at time of writing), but still we consider it highly successful.

Mid January also saw a breakthrough to VK4 from VK7. 4ZWB being the Queenslander concerned and if my memory serves me right, the VK7 stations who worked him were Col 7LZ from Launceston, John 7ZJG and Wilf 7ZAQ from Hobart.

Sorry there's not more chaps (the Ed. will be pleased), but pressure both from business and the home front is keeping me pretty busy at the moment.

Don't forget subs. are due on 1st March. Don't let us have a repetition of previous years, ask everyone you see has he paid his yet, and we might get them in a bit quicker (perhaps). 73, 7ZAS.

NORTHERN ZONE

Firstly, I must apologise for the lack of notes over the last few months. Nothing very startling has been happening but I will try to outline the happenings in the Zone now.

Firstly, to the h.f. bands. Den 7DK supplies the only constant activity here, and has, since the last lot of notes, acquired an s.s.b. transceiver which puts out a very nice signal. Using it mainly on 20 mx, Den has worked a surprising amount of DX.

Occasionally a few other stations pop up on these bands, but since John 7JF has left our ranks, only 7DK supplies constant activity.

Going higher in frequency, 52 Mc. was reasonably well populated during the Contest. A newcomer to this band was Mike 7ZMH, and of course all the old regulars turned up to work their share of stations. This band was not as good as it has been to VK7, but seems to have lasted longer than usual.

Going up to 2 mx, an extremely good opening to VK3 occurred on 14th and 15th Nov. The band opened on the Friday night and did not close until the Sunday night.

Early in the New Year an opening occurred to VK4 and Col 7LZ became the first station in the Zone to work VK4 on 2 mx.

Several new stations are on this band. They include 7ZBW, 7ZGP and 7ZLP.

There are only two stations active on 432 Mc. They are Len 7BQ and Col 7LZ. Col has worked VK3 on this band, which is a new Australian record. Reg 7RL is also on, but cannot get into Launceston from his QTH.

By the time this is in print, the 7AJ Intra-State Memorial V.h.f. Contest should be over. Hope to hear plenty of activity. 73, 7ZLP.

NORTH-WEST ZONE

Another very good roll-up to our February meeting with our President (Syd. 7SF) in the chair. Several visitors were welcomed including Den 7DK, Len 7LN and our latest new member to the Zone, John 7JF, who is now at Gowrie Park, and also Frank Richards, who is anxiously awaiting the results of the latest A.O.C.P. exams. Best of luck Frank.

We had an excellent illustrated lecture by our old friend, Lon Jensen, called "40 Years of Ham Radio" and we really saw some old-time equipment being used. This was followed by a talk with some professional looking colour slides by our worthy Treasurer Max on his recent trip to New Zealand. It was very interesting to see some of the ZL boys that we have had QSOs with in the last few years. A very enjoyable evening indeed.

Yours truly had his first introduction to v.h.f. mobile the other evening when Kevin 7ZAH called and we worked bob 7ZAA and Winston 7ZWN with 5 by 9 sigs all round. Could be another convert to v.h.f. mobile. There has been quite a lot of activity on the v.h.f. bands here lately and many Interstate contacts have been made.

Don't forget the Annual Dinner to be held in Hobart, chaps. Hope to see you all there. Next meeting a check will be made to see what equipment is available, suitable for the W.I.C.E.N. net. Check up on your mobile and portable rigs and make sure they are in working order. 73, 7KH.

HAMADS

Minimum 5/-, for thirty words. Extra words, 2d. each.

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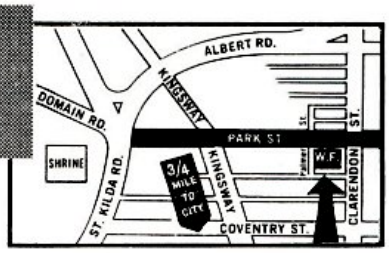

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